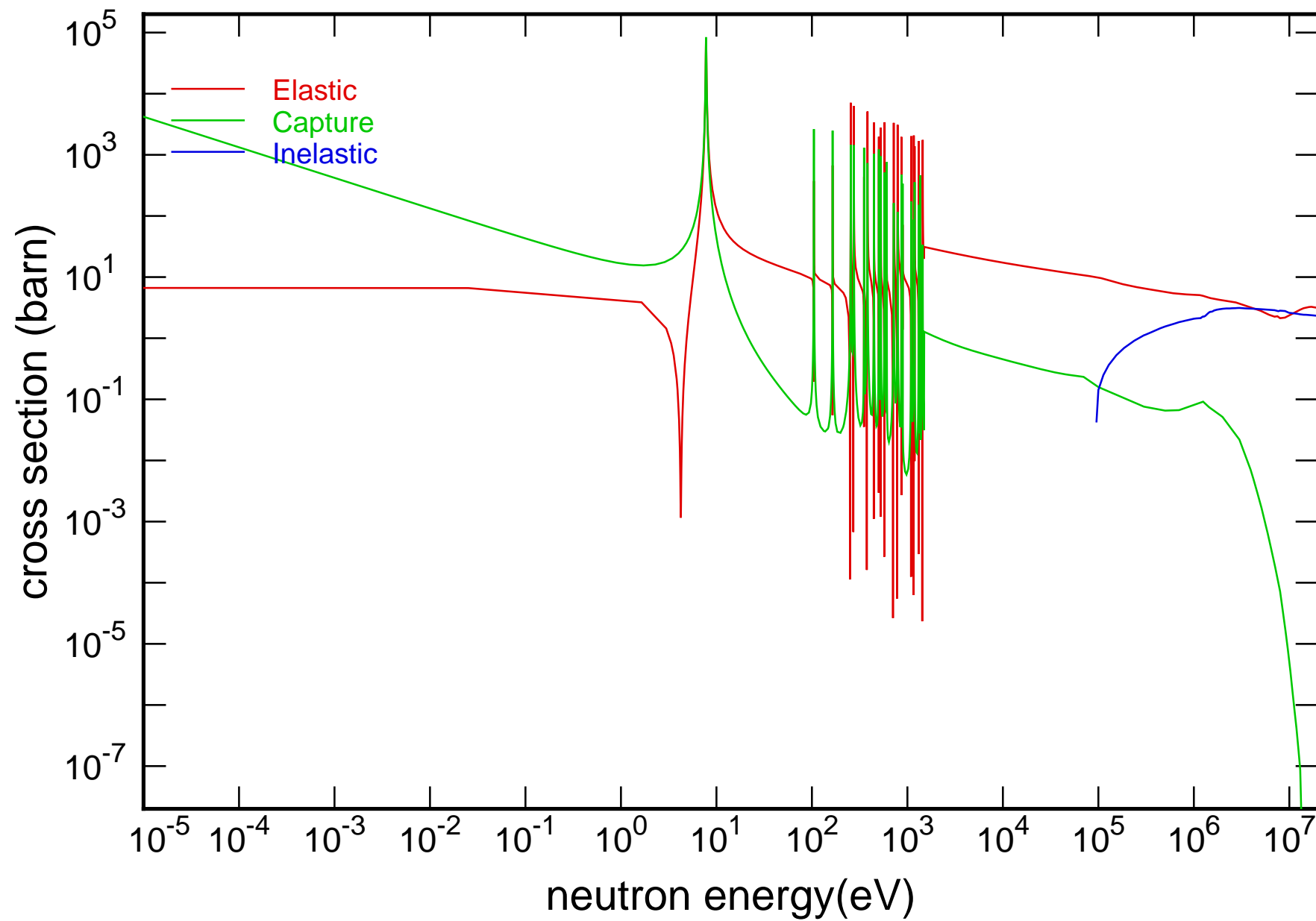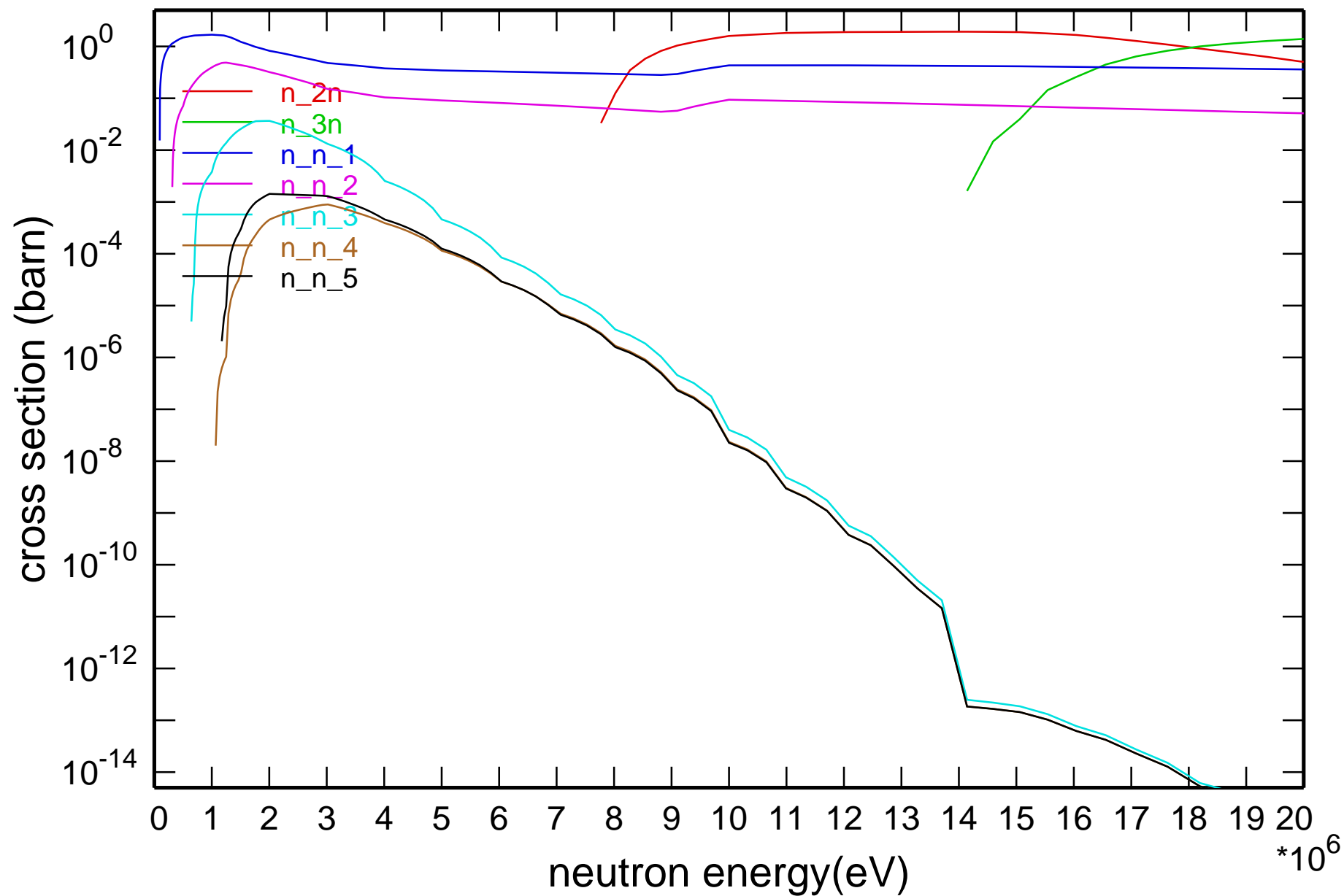Main Cross Sections

Cross Section

cross section (barn)

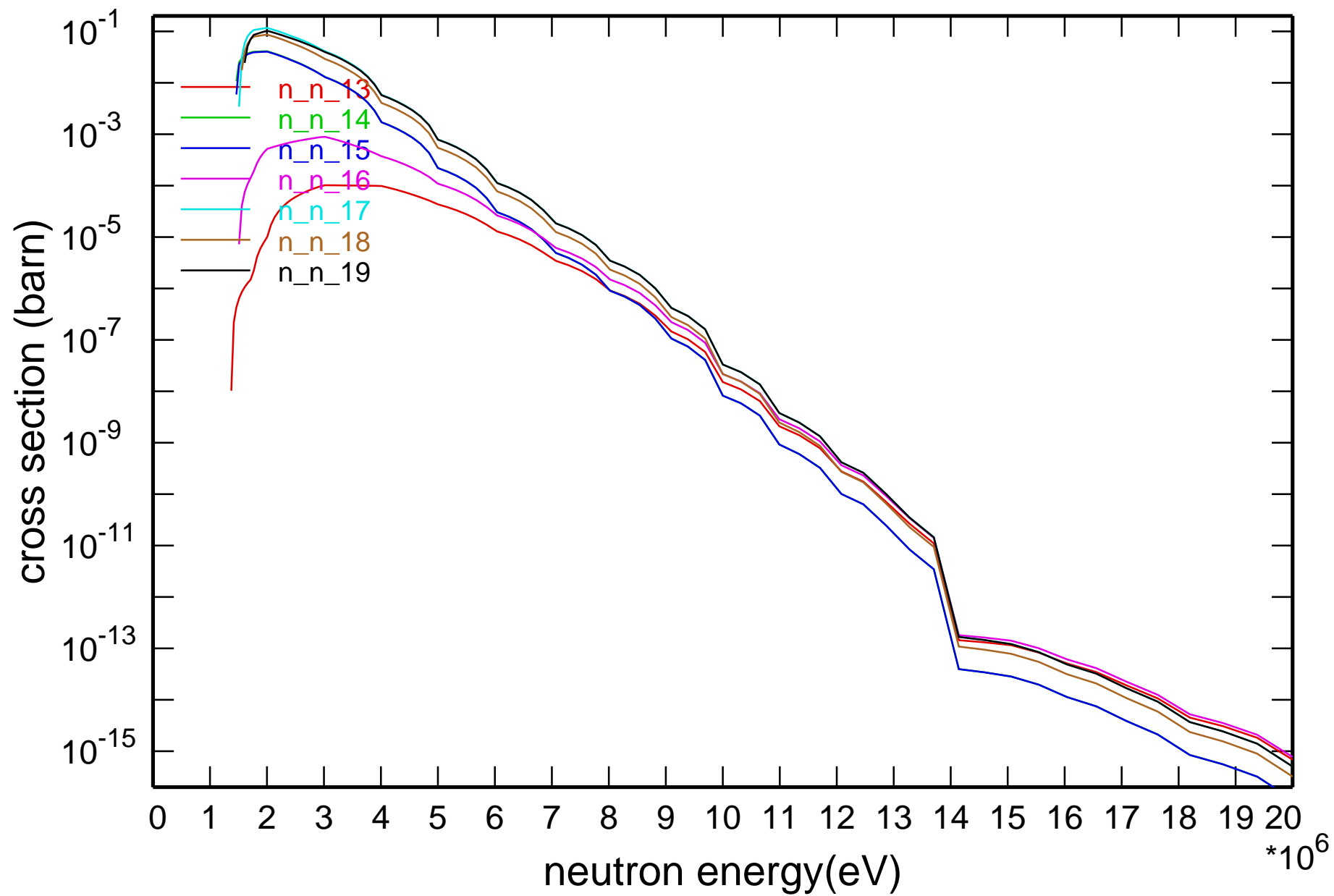neutron energy(eV)

$*10^6$

n_2n
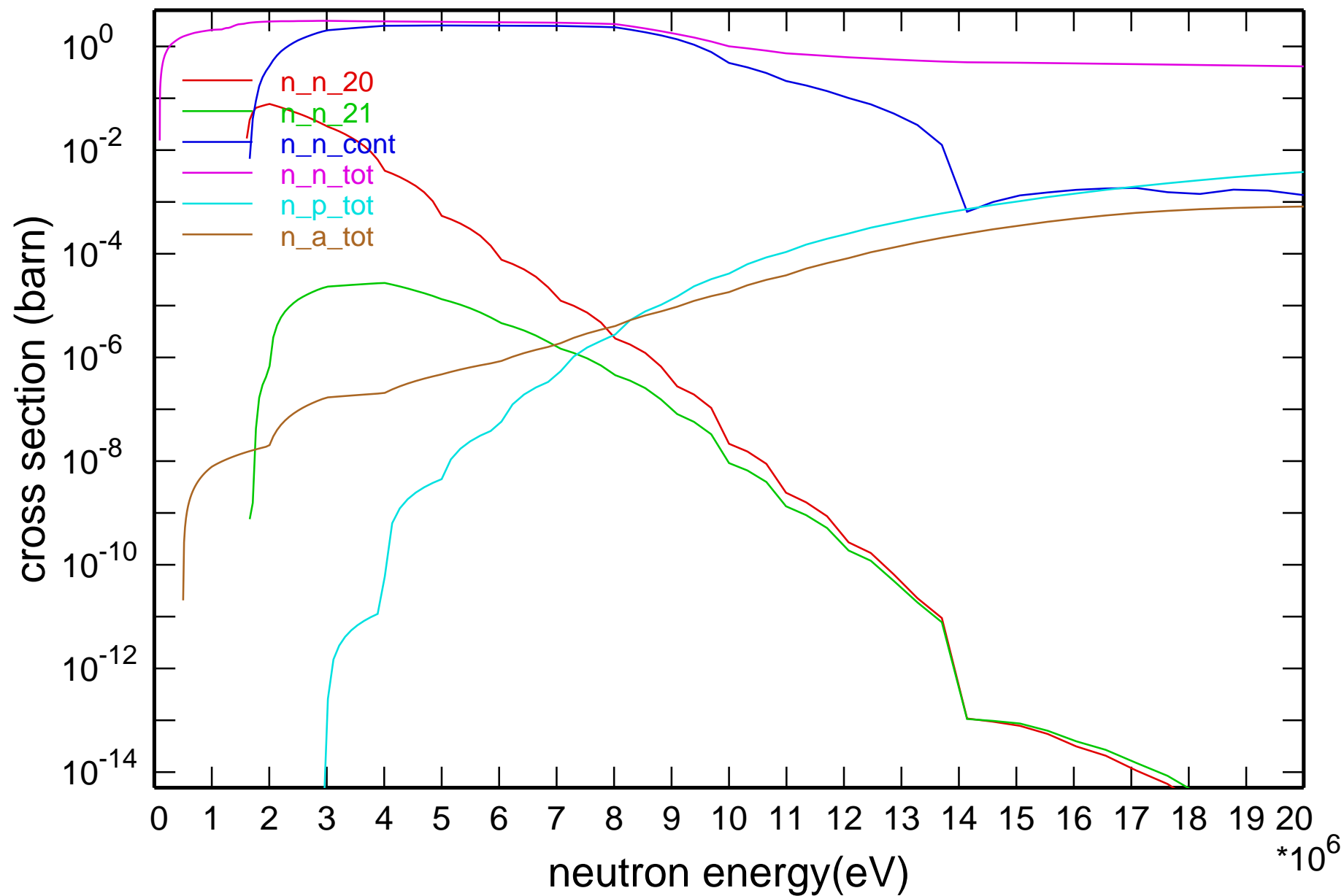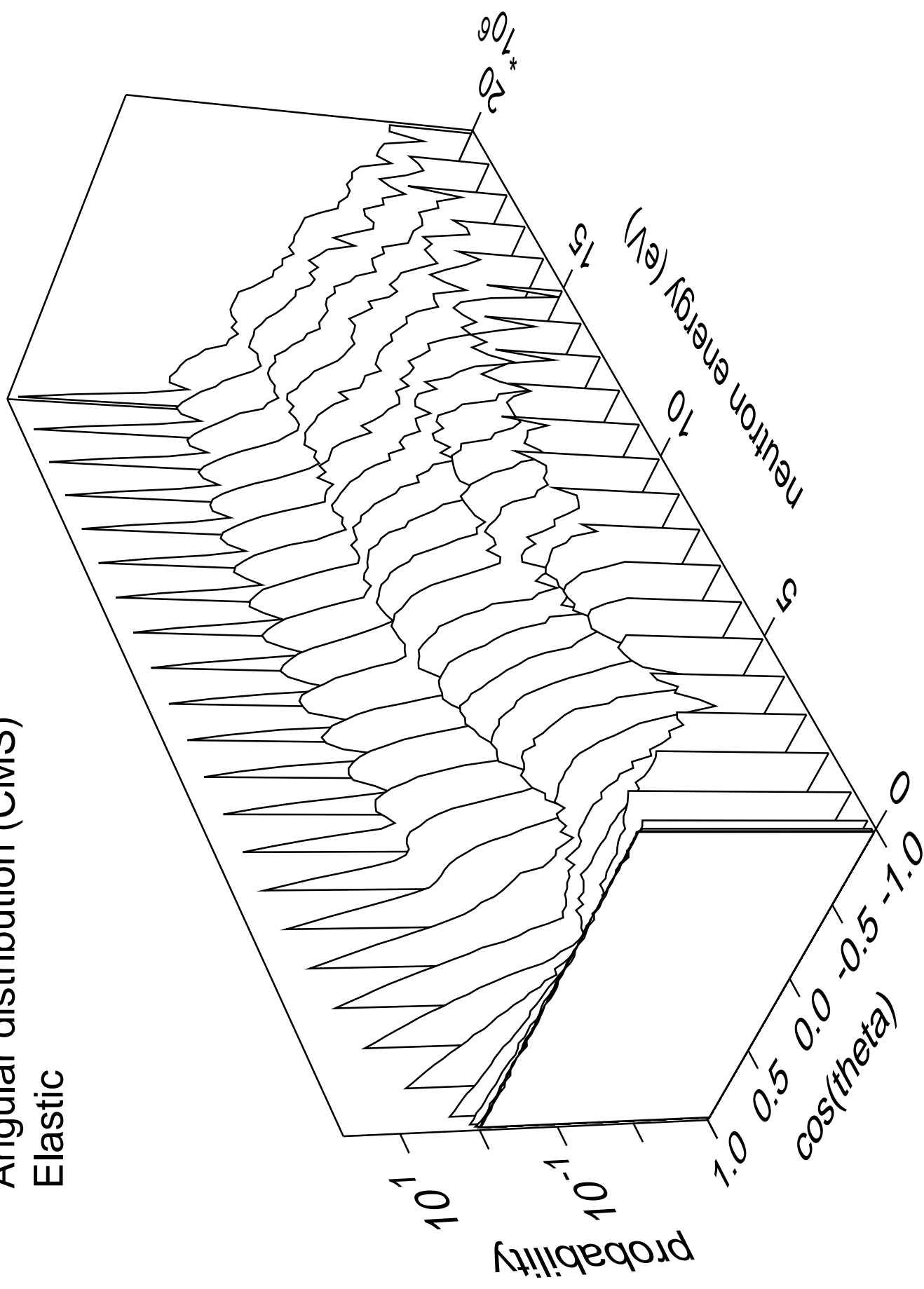n_3n
n_n_1
n_n_2
n_n_3
n_n_4
n_n_5
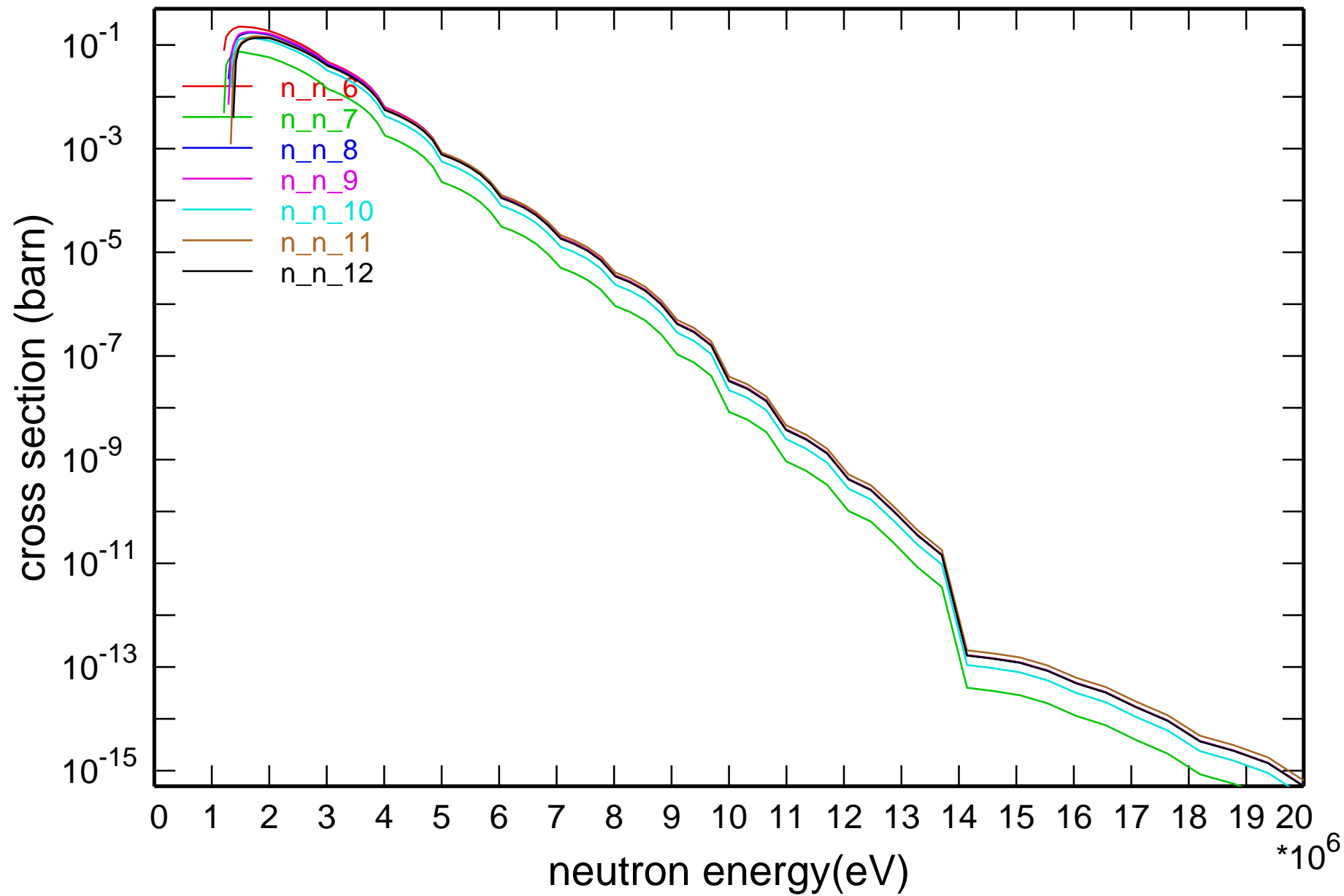
Cross Section

Cross Section

Cross Section

Angular distribution (CMS)
Elastic

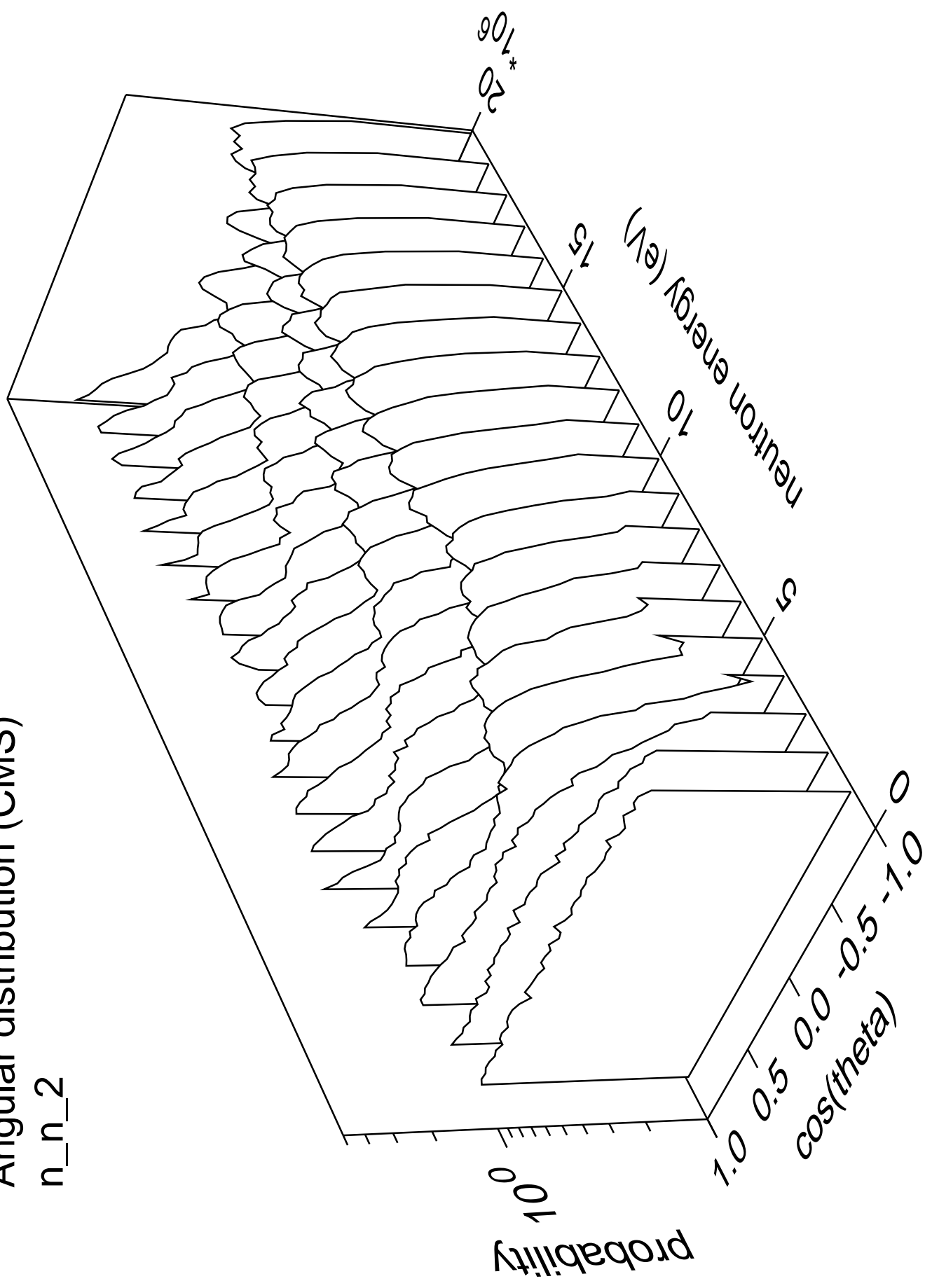Angular distribution (CMS)
n_n_1
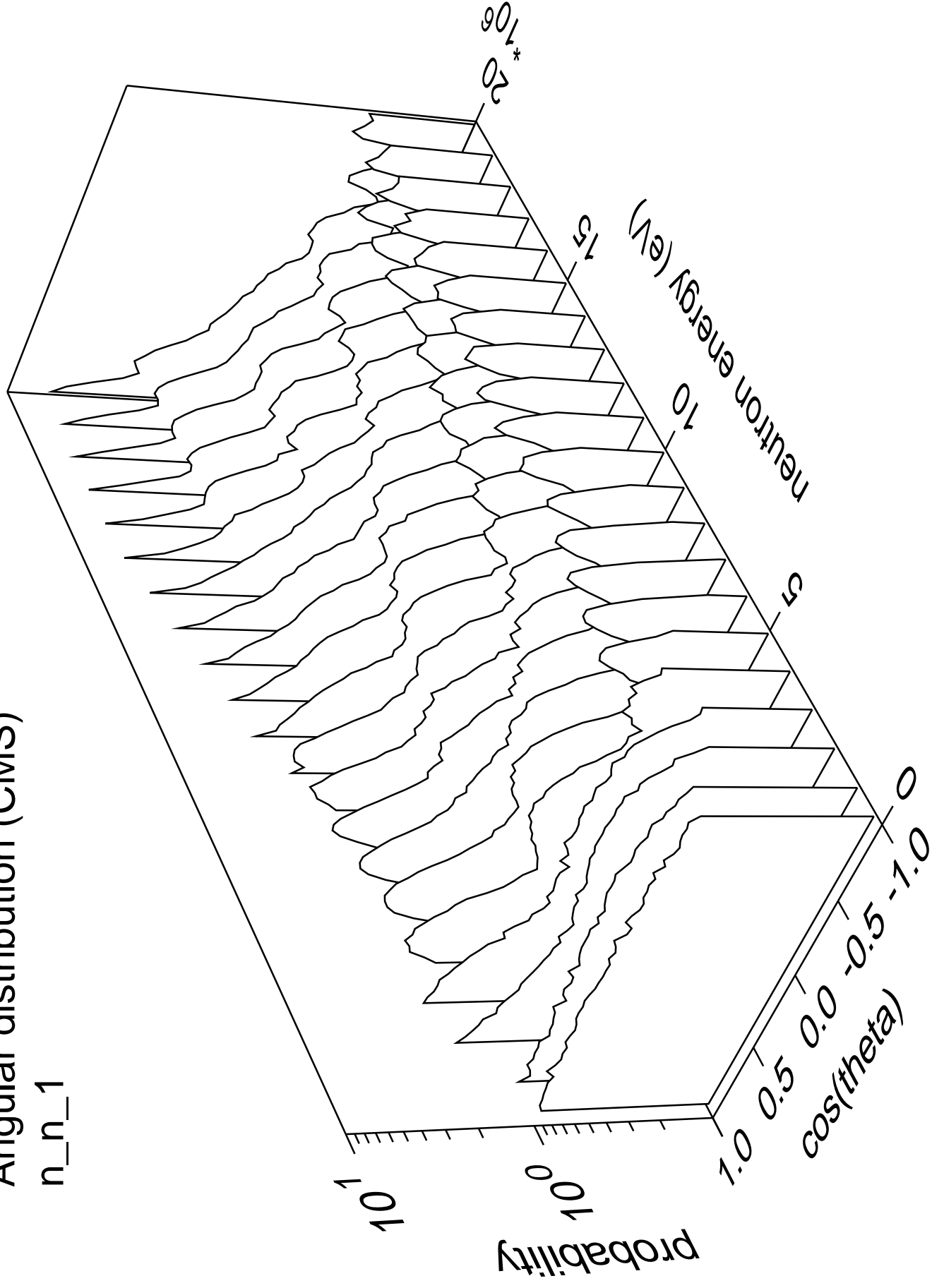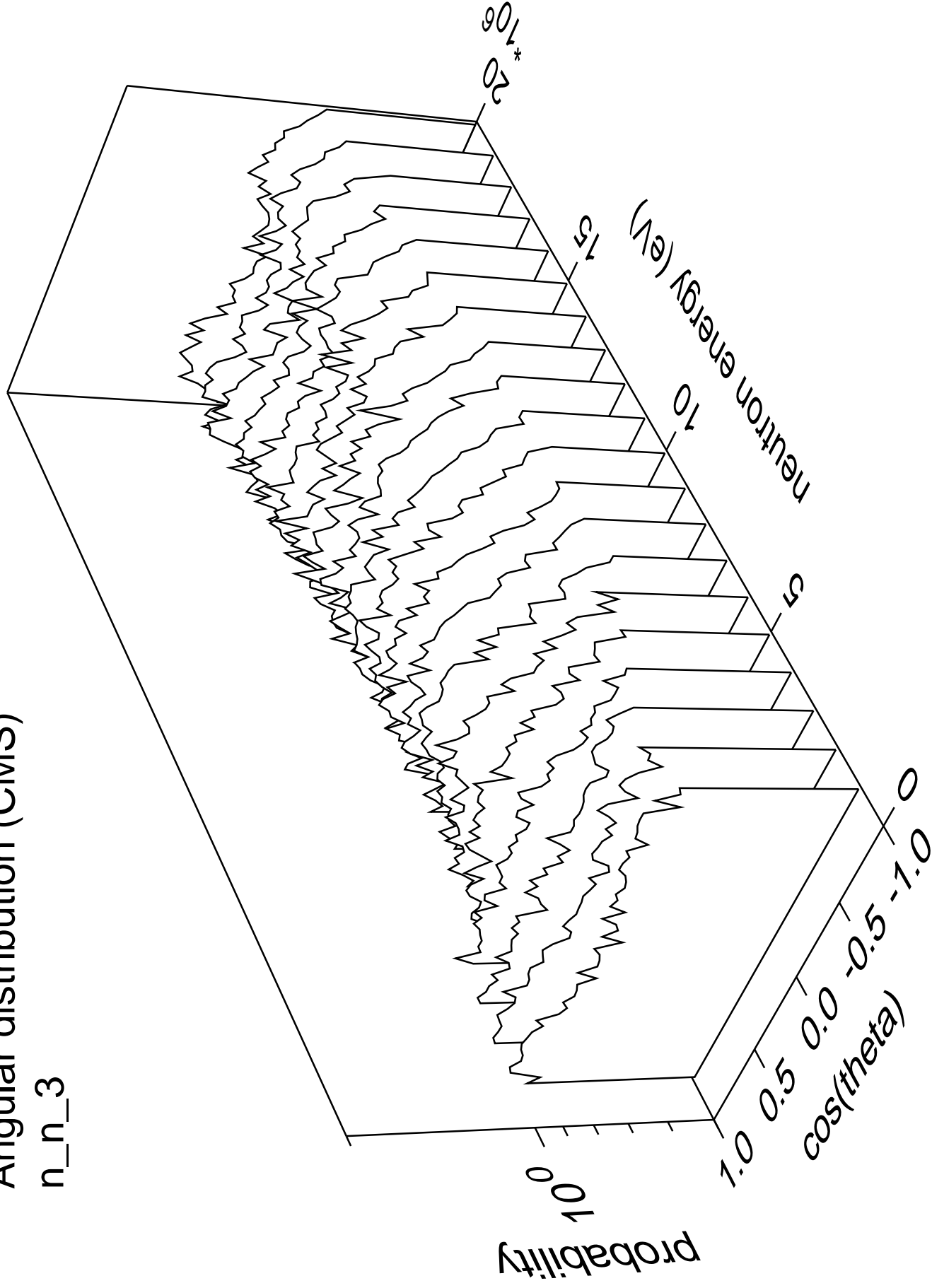
probability

neutron energy (eV)

cos(theta)

Angular distribution (CMS)
n_n_2

cos(theta)

neutron energy (eV)

probability

$*10^6$

Angular distribution (CMS)
n_n_3

probability

10⁰

cos(theta)

1.0 0.5 0.0 -0.5 -1.0

0

5

10

15

20
*10⁶

neutron energy (eV)

Angular distribution (CMS)
n_n_4

probability

cos(theta)

neutron energy (eV)

1.0 0.5 0.0 -0.5 -1.0

0   5   10   15   20

*10⁶

Angular distribution (CMS)
n_n_5

probability

10^0

cos(theta)

1.0 0.5 0.0 -0.5 -1.0

0

5

10

15

20

neutron energy (eV)

*10^6

Angular distribution (CMS)
n_n_6

neutron energy (eV)

cos(theta)

probability

Angular distribution (CMS)
n_n_7

probability

neutron energy (eV)

cos(theta)

Angular distribution (CMS)
n_n_8

probability

neutron energy (eV)

cos(theta)

20 *10^6

15

10

5

0

10^0

1.0 0.5 0.0 -0.5 -1.0

Angular distribution (CMS)
n_n_9

probability

$*10^6$

neutron energy (eV)

20

15

10

5

0

cos(theta)

1.0 0.5 0.0 -0.5 -1.0

Angular distribution (CMS)
n_n_10

probability

neutron energy (eV)

cos(theta)
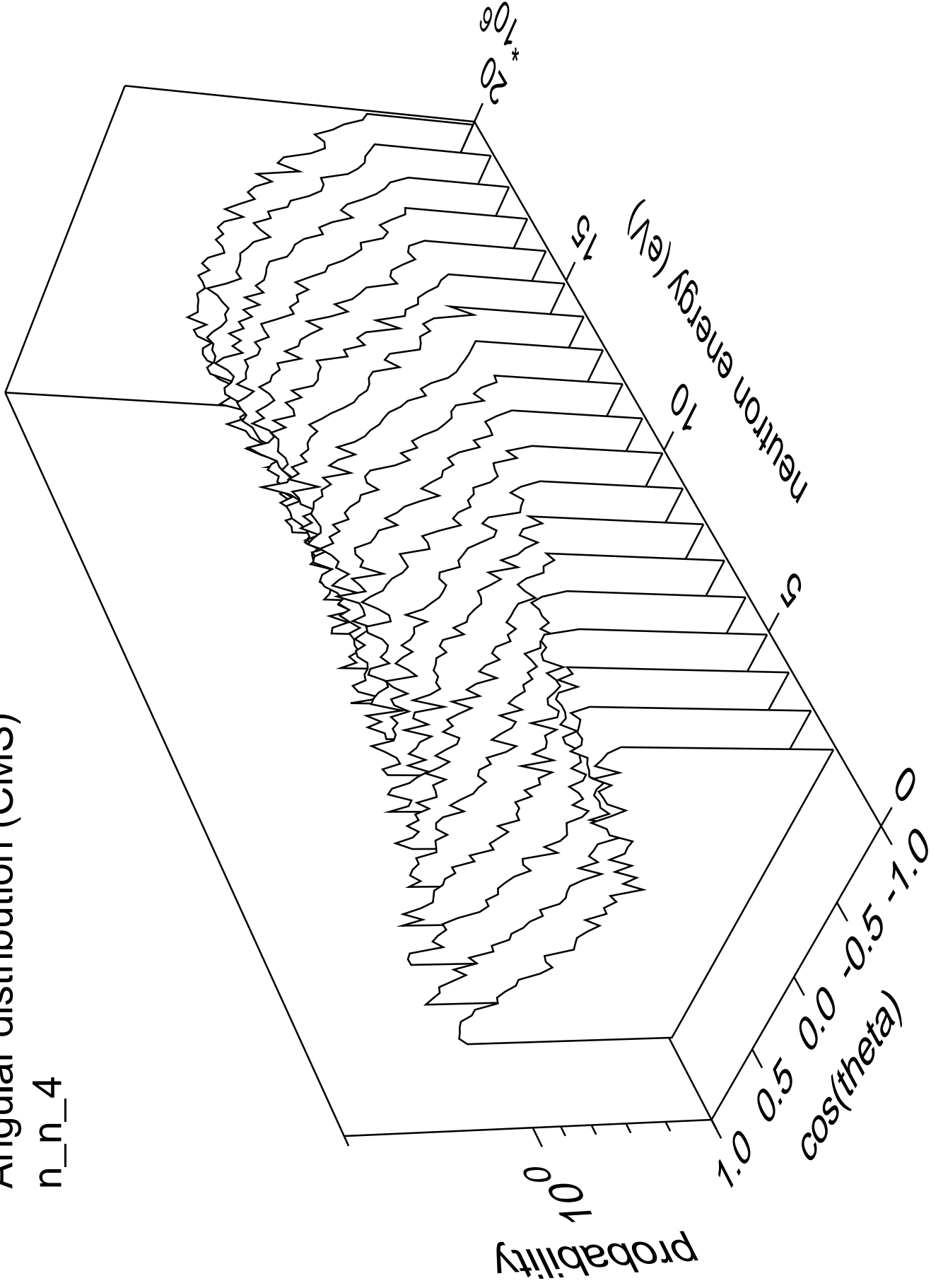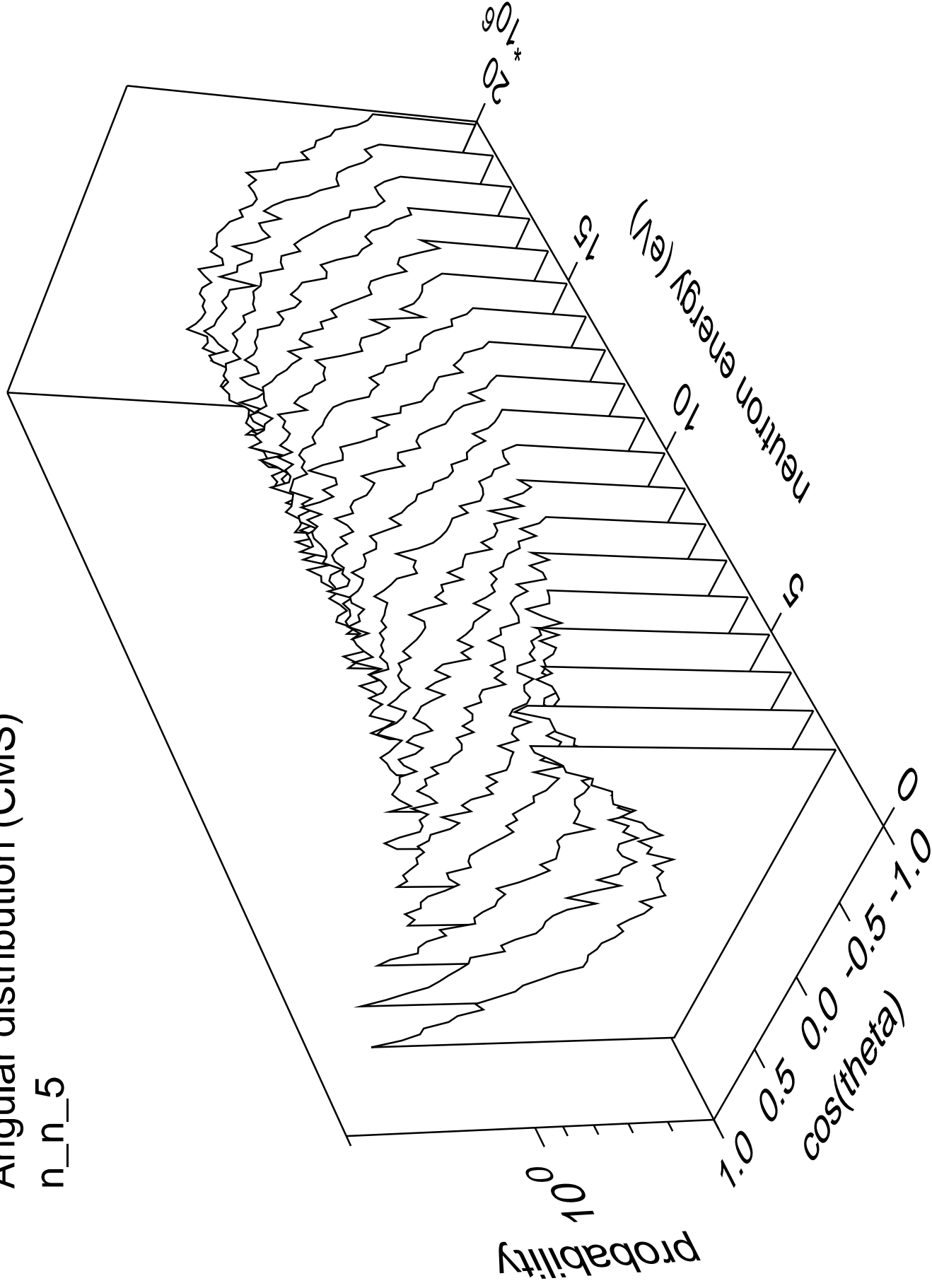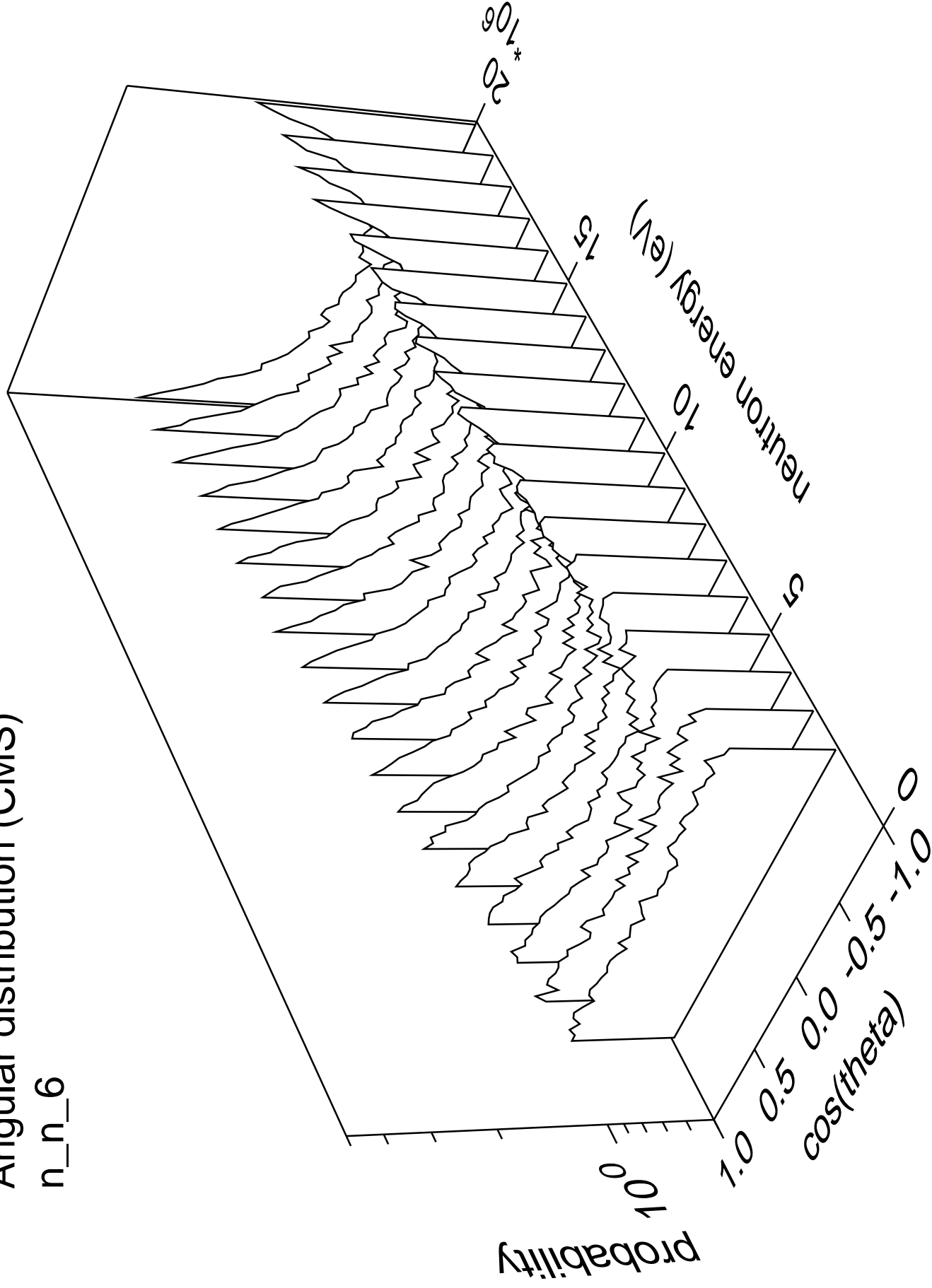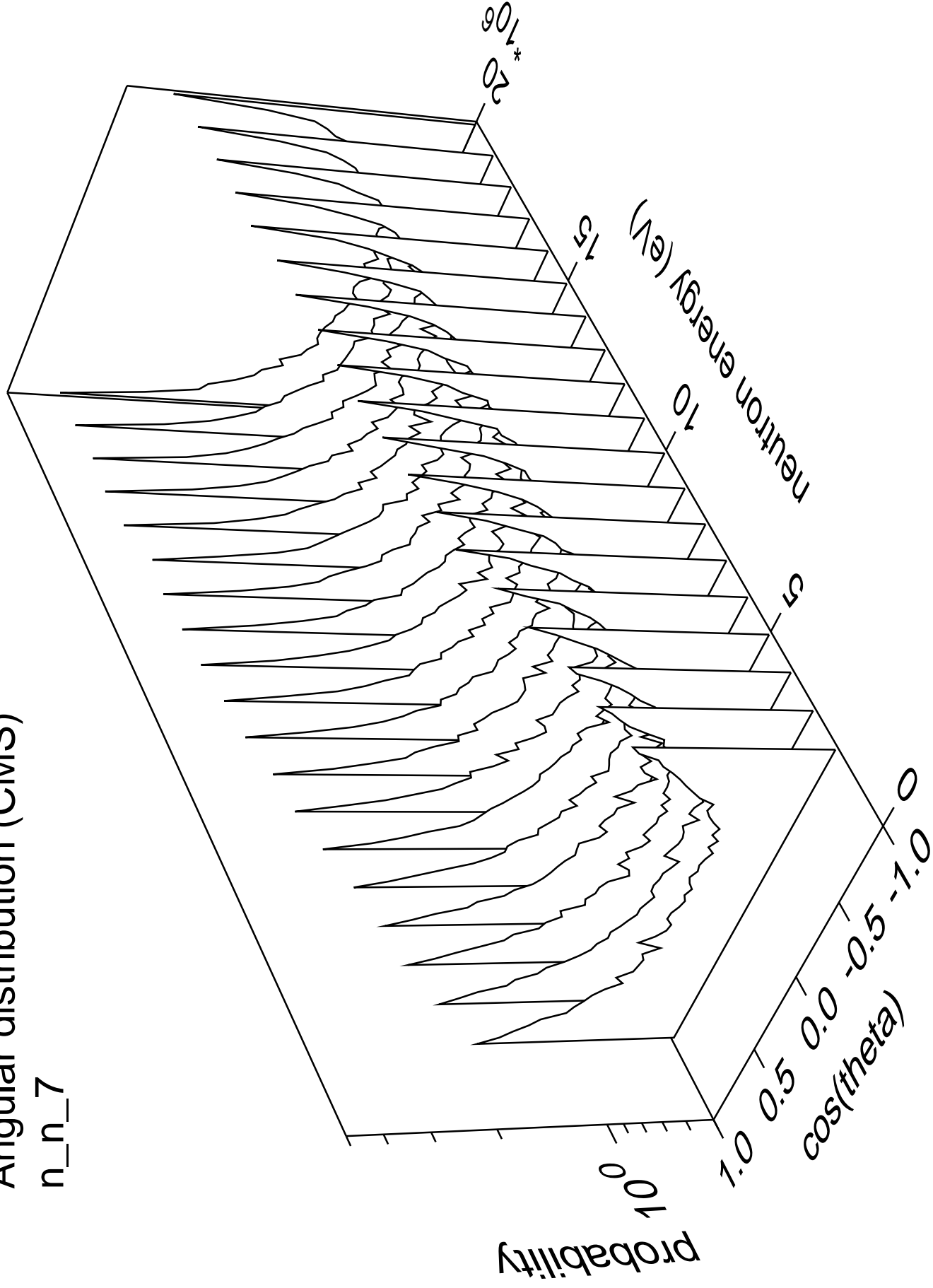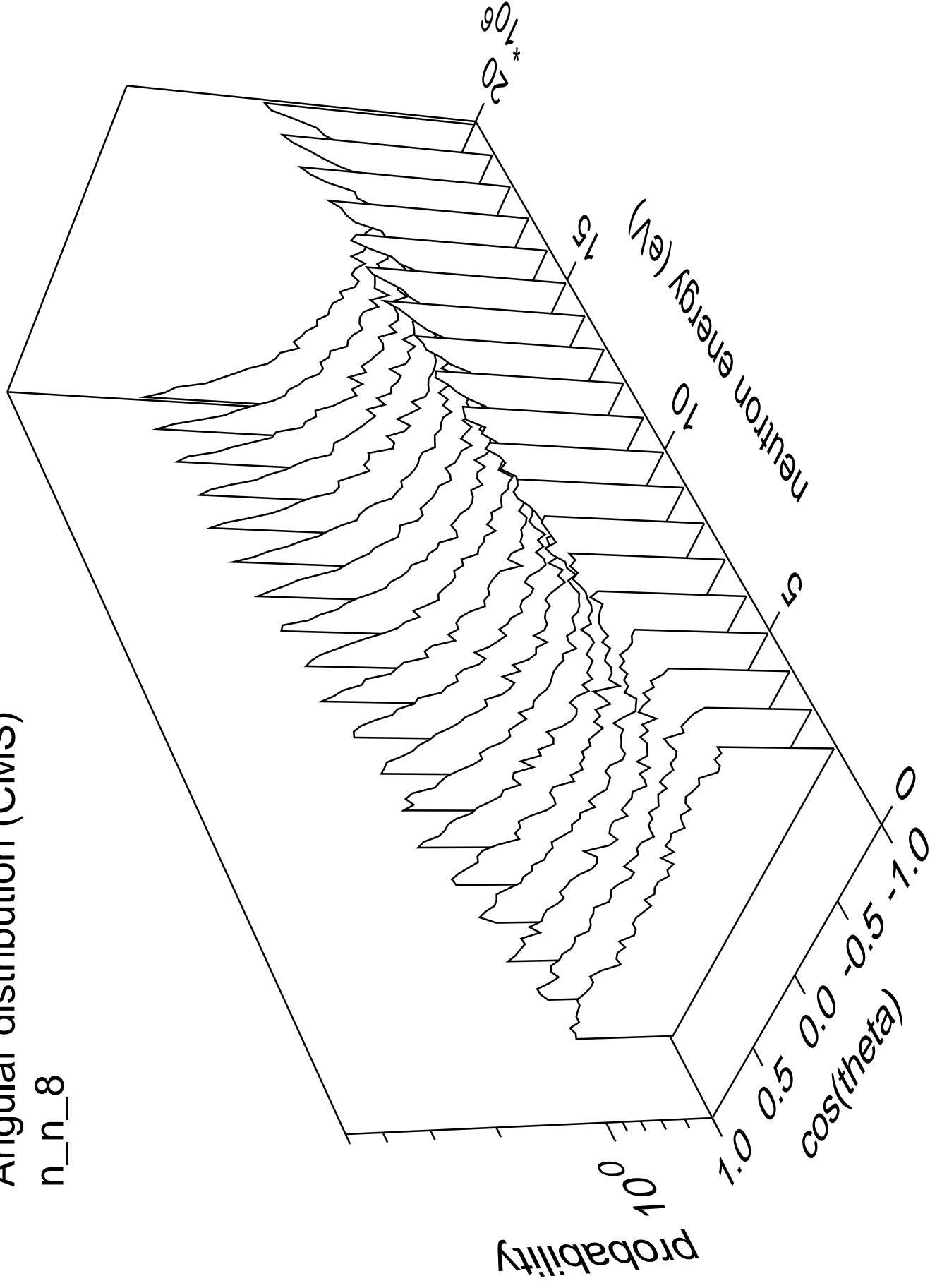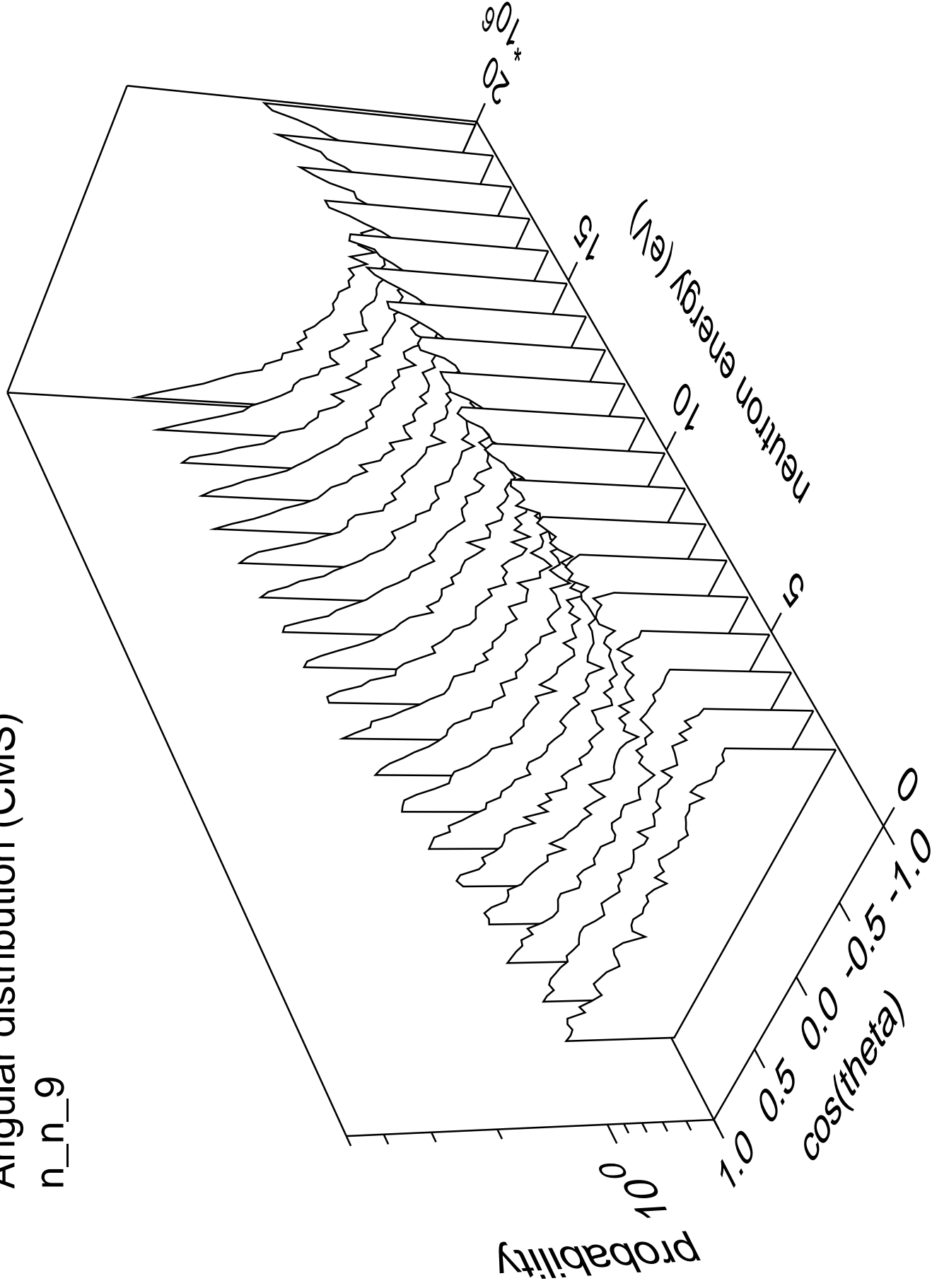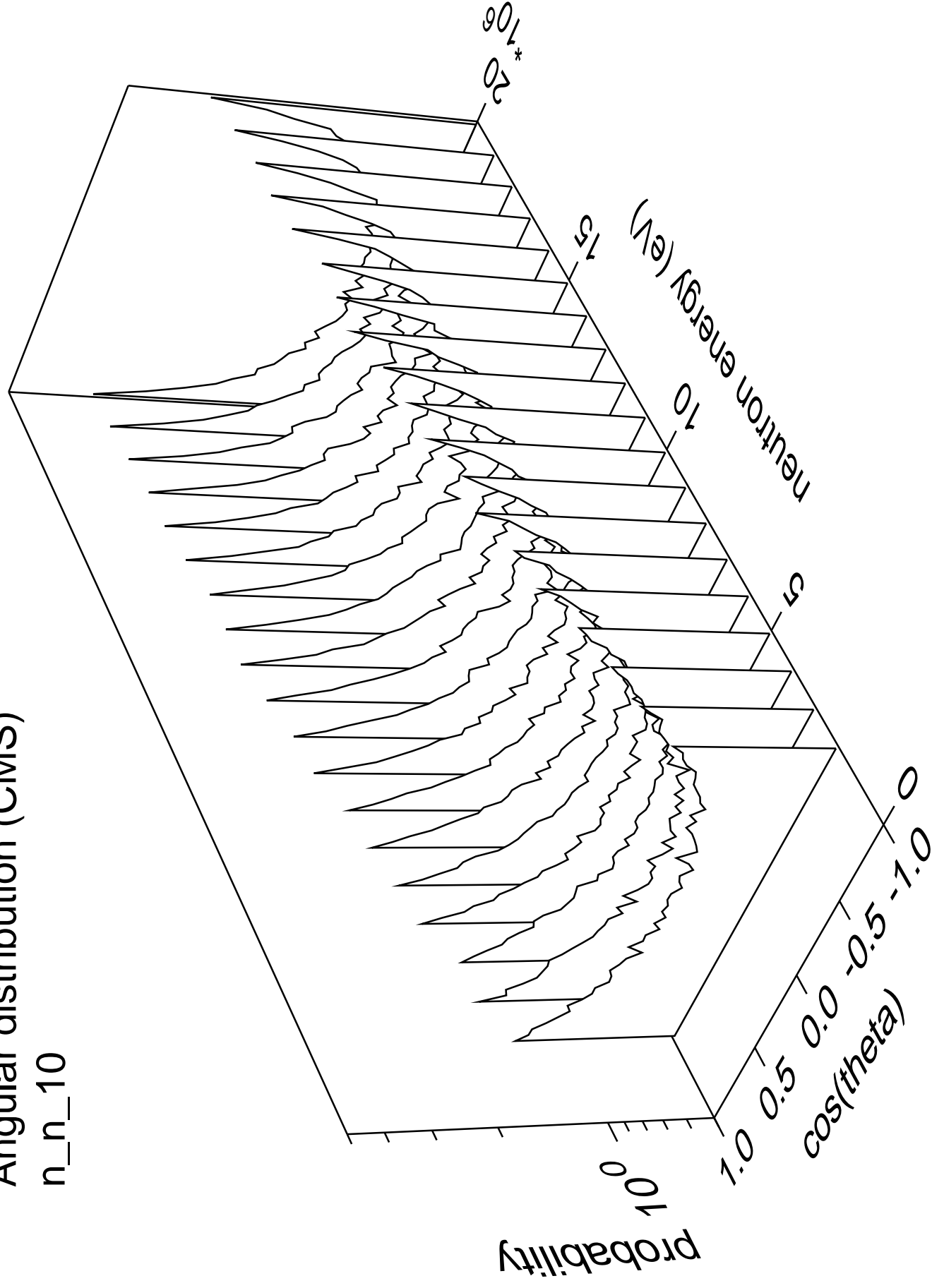
Angular distribution (CMS)
n_n_11

Angular distribution (CMS)
n_n_12

probability

20 *10^6

15

10

5

neutron energy (eV)

1.0 0.5 0.0 -0.5 -1.0

cos(theta)

10^0

Angular distribution (CMS)
n_n_13

probability

cos(theta)

neutron energy (eV)

Angular distribution (CMS)
n_n_14

neutron energy (eV)

cos(theta)

probability

Angular distribution (CMS)
n_n_15

probability

neutron energy (eV)

cos(theta)

Angular distribution (CMS)
n_n_16

probability

neutron energy (eV)

cos(theta)

Angular distribution (CMS)
n_n_17

probability

neutron energy (eV)

cos(theta)

1.0 0.5 0.0 -0.5 -1.0

0

5

10

15

20 *10⁶

Angular distribution (CMS)
n_n_18

neutron energy (eV)

cos(theta)

probability

Angular distribution (CMS)
n_n_19

cos(theta)

neutron energy (eV)

probability

Angular distribution (CMS)
n_n_20

probability

20
*10⁶

15

neutron energy (eV)

10

5

1.0 0.5 0.0 -0.5 -1.0

cos(theta)

10⁰

Angular distribution (CMS)
n_n_21

probability

10⁰

cos(theta)

1.0 0.5 0.0 -0.5 -1.0

neutron energy (eV)

0   5   10   15   20

*10⁶

Energy distribution (LABS)
n_2n

probability

energy (eV)   *10⁶

neutron energy (eV)

Energy distribution (LABS)
n_3n

probability

10^1

10^{-1}

energy (eV)

0

2

4

6 *10^6

neutron energy (eV)

14

16

18

20 *10^6

Energy distribution (LABS)
n_n_cont

probability

10^0

10^{-2}

energy (eV)   *10⁶

0   5   10   15   20

neutron energy (eV)

0   5   10   15   20   *10⁶

Gamma energy distribution
Capture

probability

gamma energy (MeV)

neutron energy (eV)

20
15
10
5
0

0   5   10   15   20

0   5   10   15   20 *10⁶

Gamma angles distribution
Capture

neutron energy (eV)

cos(theta)

probability

20 *10⁶

15

10

5

0

1.0 0.5 0.0 -0.5 -1.0

Gamma multiplicities distribution
Capture

probability

multiplicity

neutron energy (eV)

20 *10⁶

Gamma energy distribution
n_2n

probability

neutron energy (eV)

gamma energy (MeV)

20 *10⁶

15

10

5

20

15

10

5

0

60

40

20

Gamma angles distribution
n_2n

Gamma multiplicities distribution
n_2n
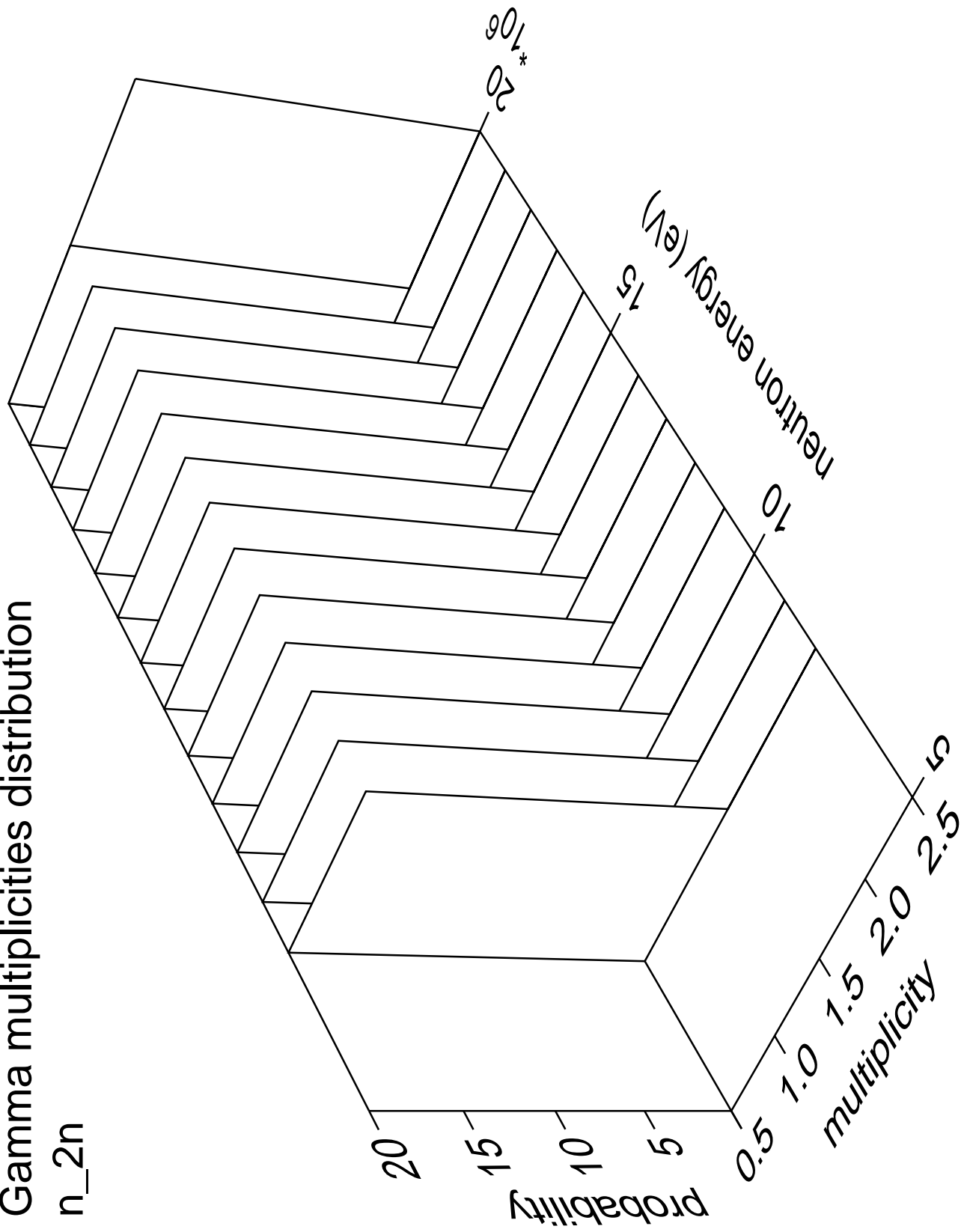
probability

20 15 10 5

0.5 1.0 1.5 2.0 2.5 multiplicity

5 10 15 20 neutron energy (eV)

20 *10^6

Gamma energy distribution
n_3n

probability

neutron energy (eV)

gamma energy (MeV)

20 *10^6

18

16

14

20

15

10

5

0

60

40

20

Gamma angles distribution
n_3n

probability

neutron energy (eV)

cos(theta)

20 *10^6

18

16

14

1.0   0.5   0.0   -0.5   -1.0

10^0
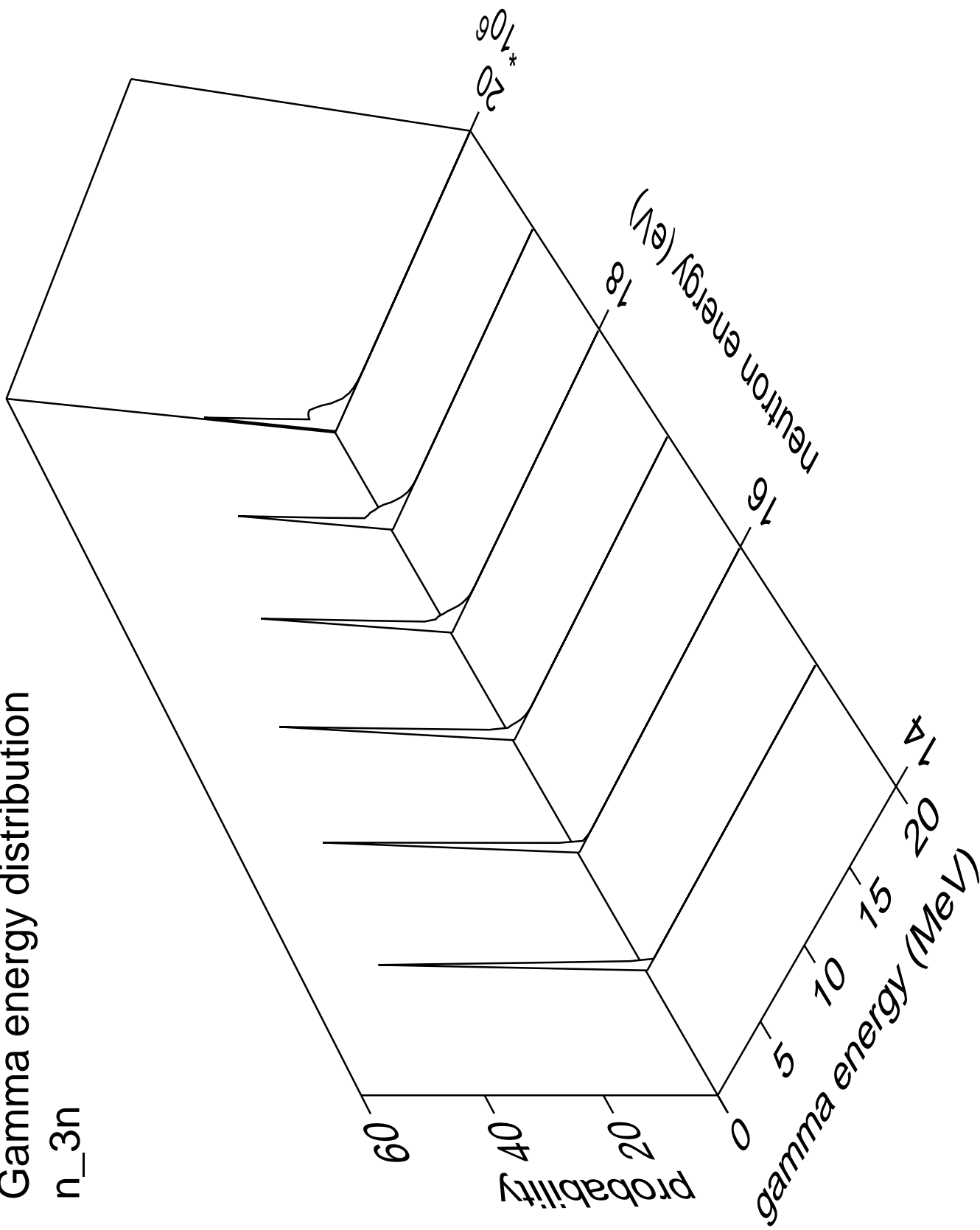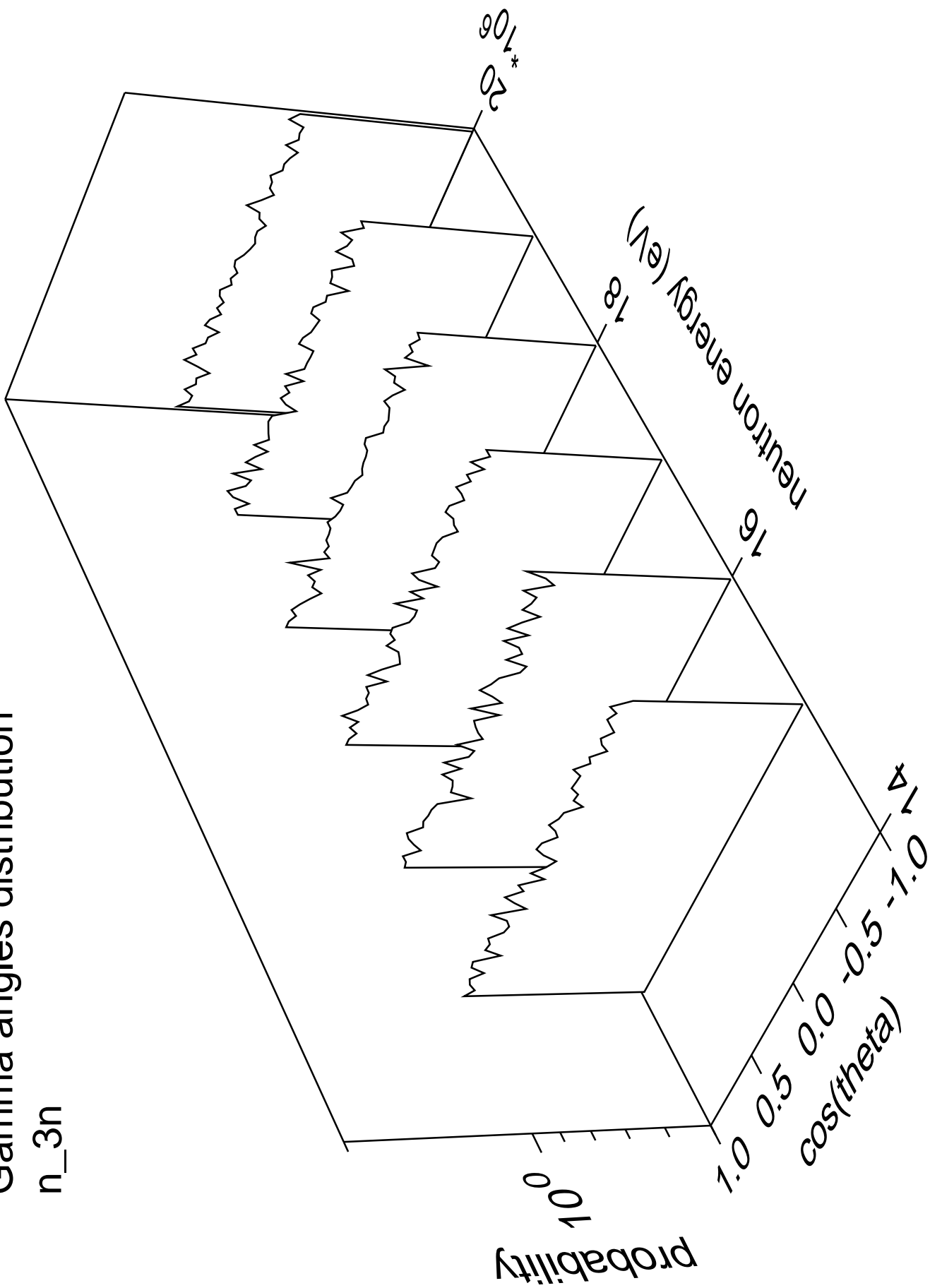
Gamma multiplicities distribution
n_3n

Gamma energy distribution
n_n_1

probability

neutron energy (eV)

gamma energy (MeV)

20 *10⁶

15

10

5

0

100

50

0

5

10

15

20

Gamma angles distribution
n_n_1

probability

neutron energy (eV)

cos(theta)

20 *10⁶

15

10

5

0

1.0 0.5 0.0 -0.5 -1.0

10⁰
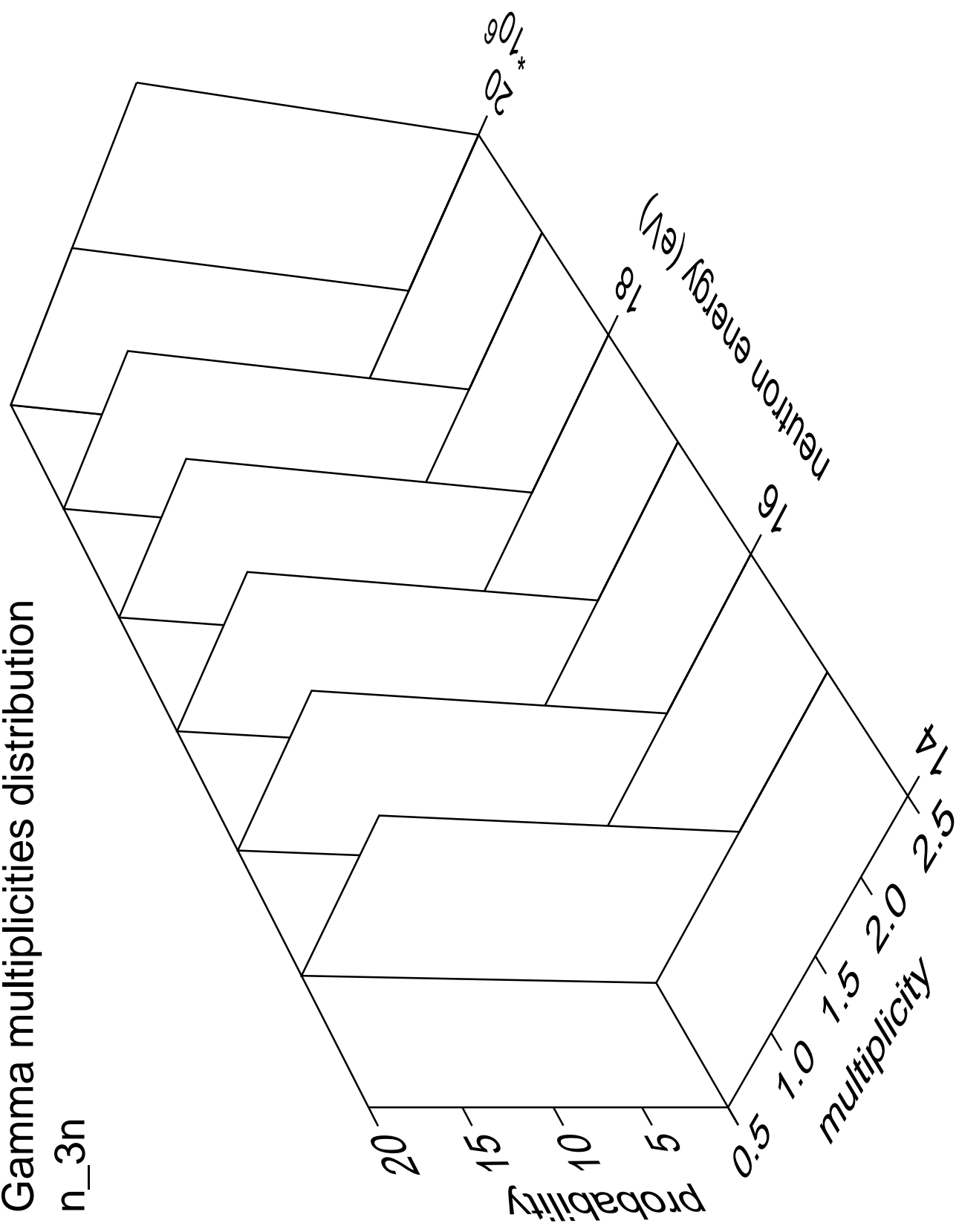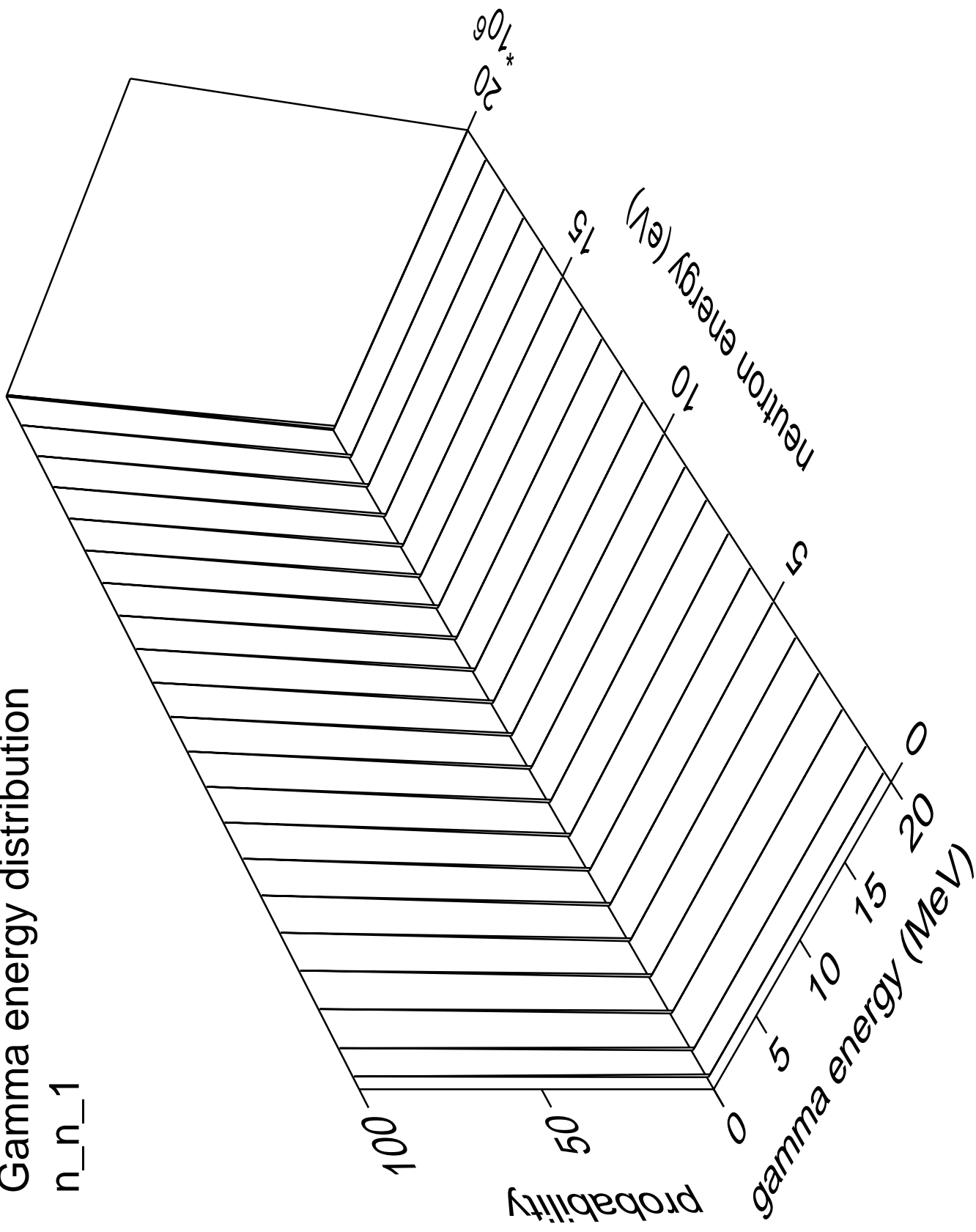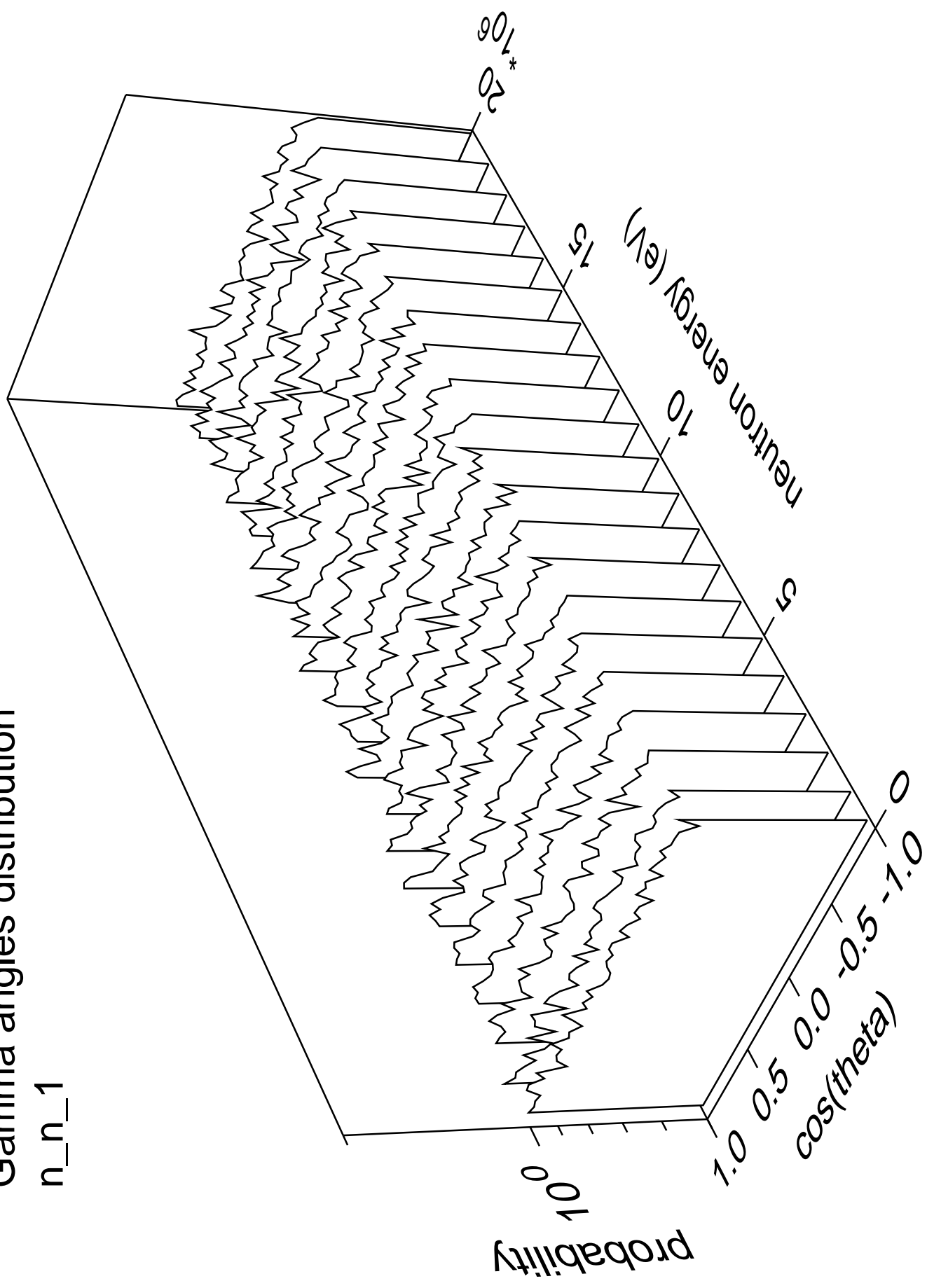
Gamma multiplicities distribution
n_n_1

Gamma energy distribution
n_n_2

probability

neutron energy (eV)

gamma energy (MeV)

20 *10⁶

15

10

5

0

5

10

15

20

0

50

100

Gamma angles distribution
n_n_2

probability

neutron energy (eV)

cos(theta)

20 *10⁶

15

10

5

0

1.0 0.5 0.0 -0.5 -1.0

10⁰
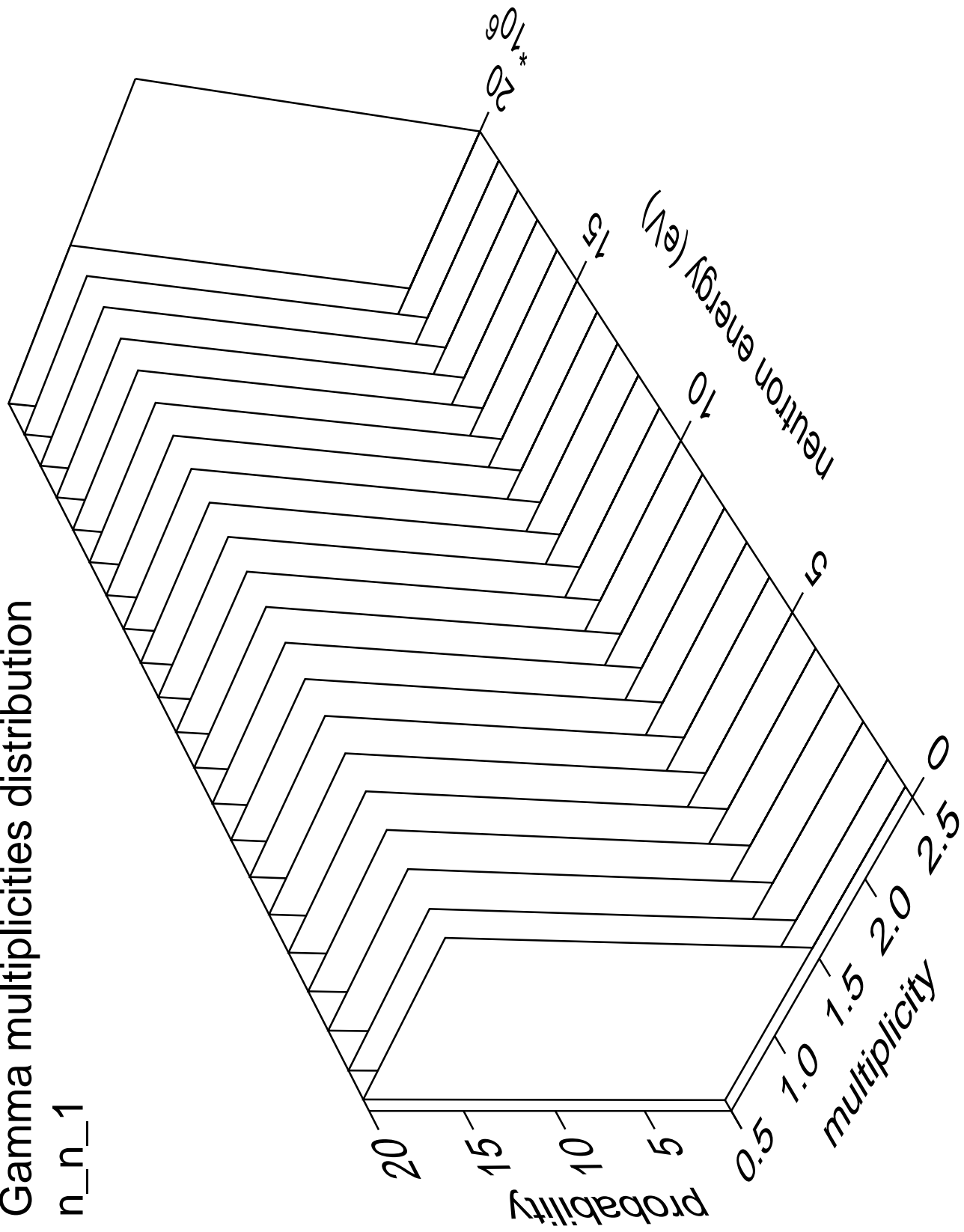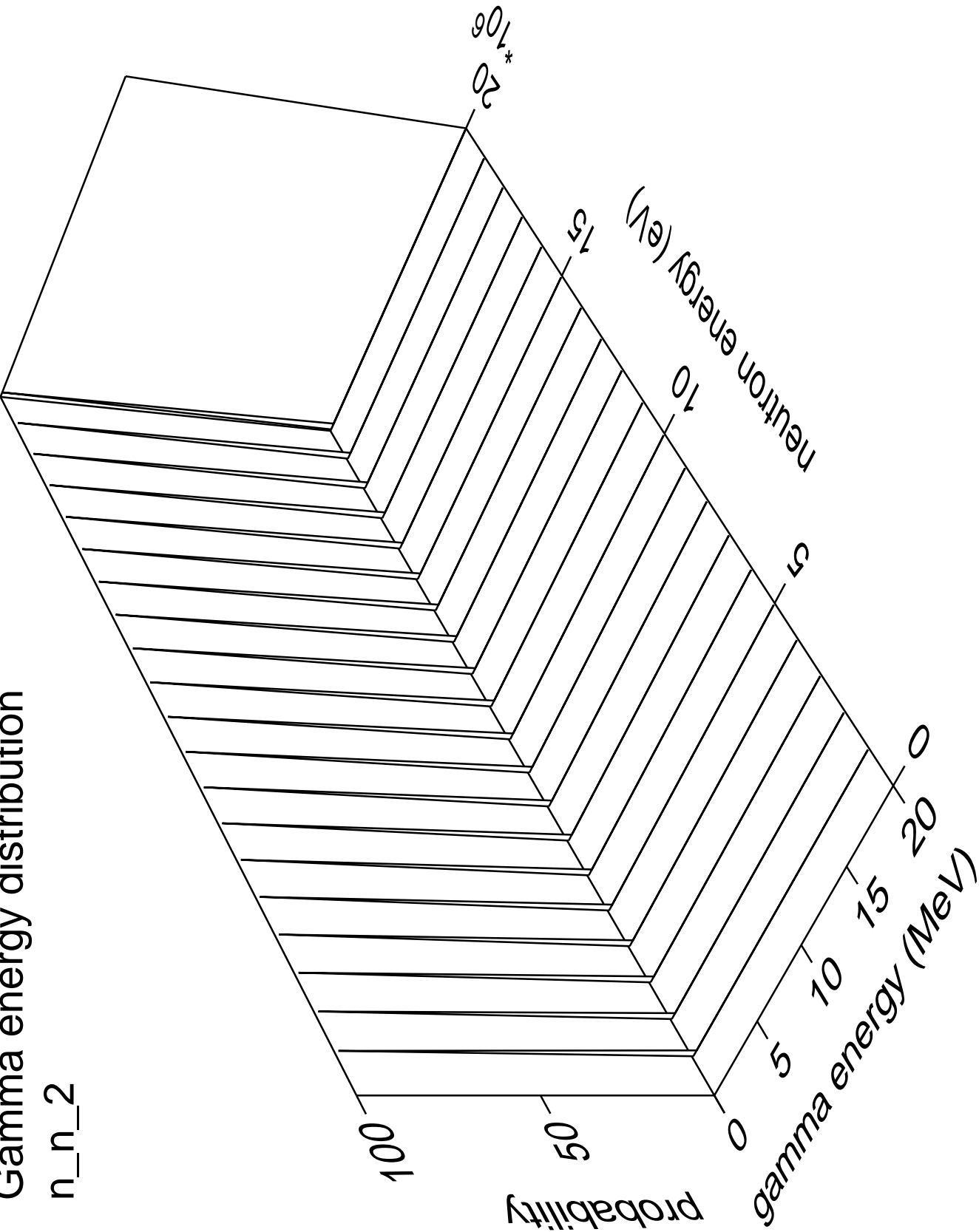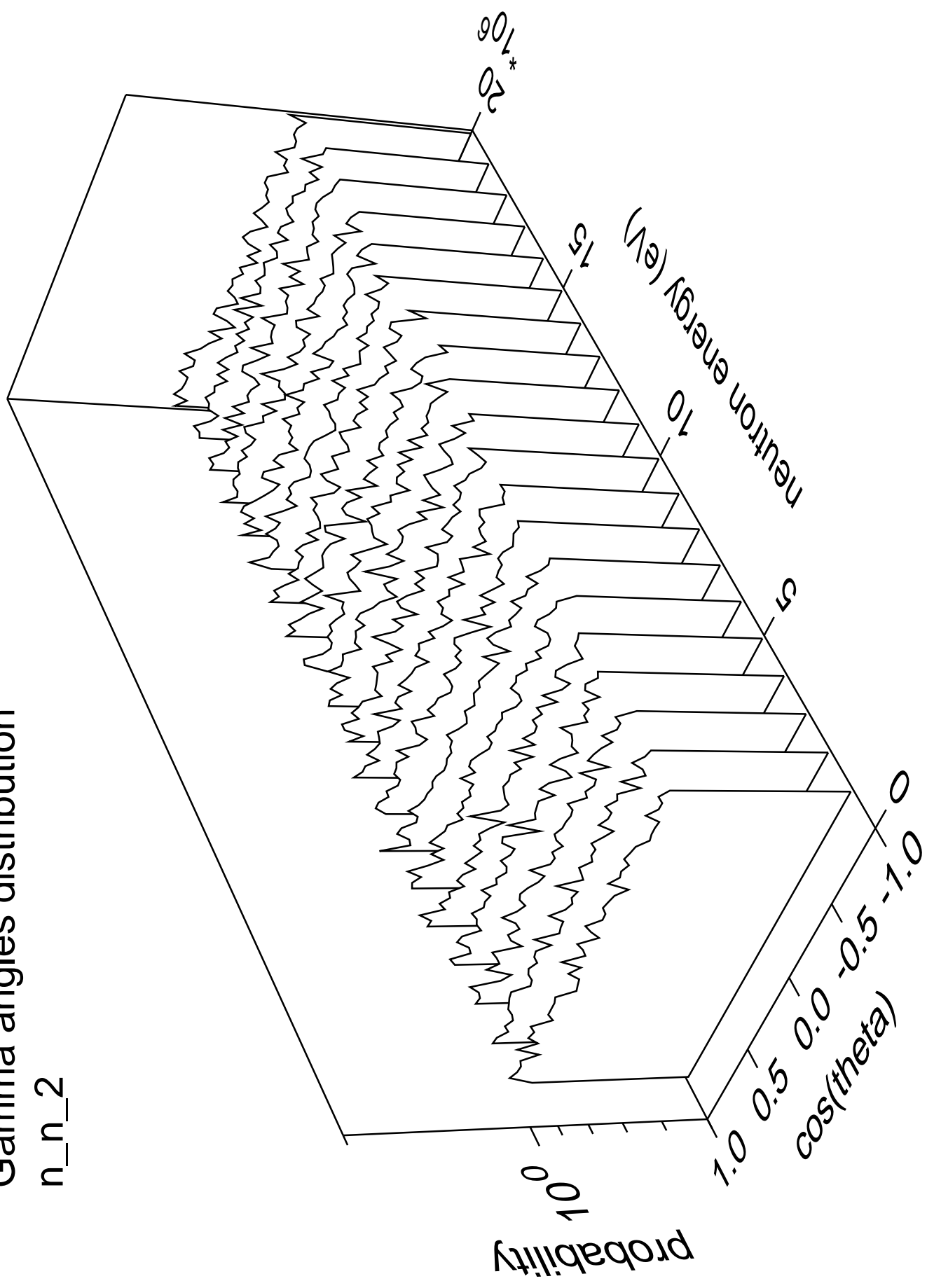
Gamma multiplicities distribution n_n_2

Gamma energy distribution
n_n_3

neutron energy (eV)

gamma energy (MeV)

probability

20 *10⁶

15

10

5

0

20

15

10

5

0

100

50

Gamma angles distribution
n_n_3

probability

cos(theta)
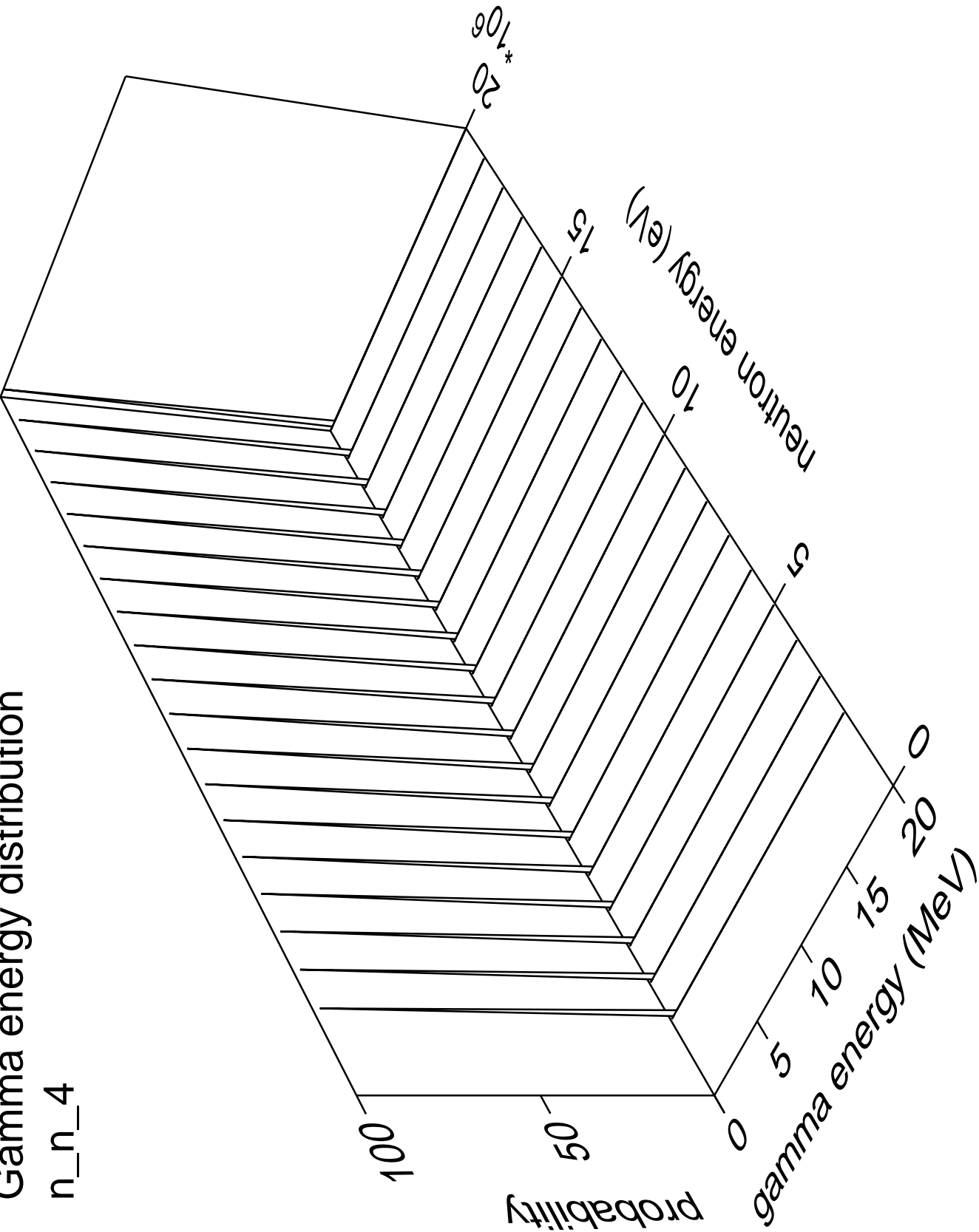
neutron energy (eV)
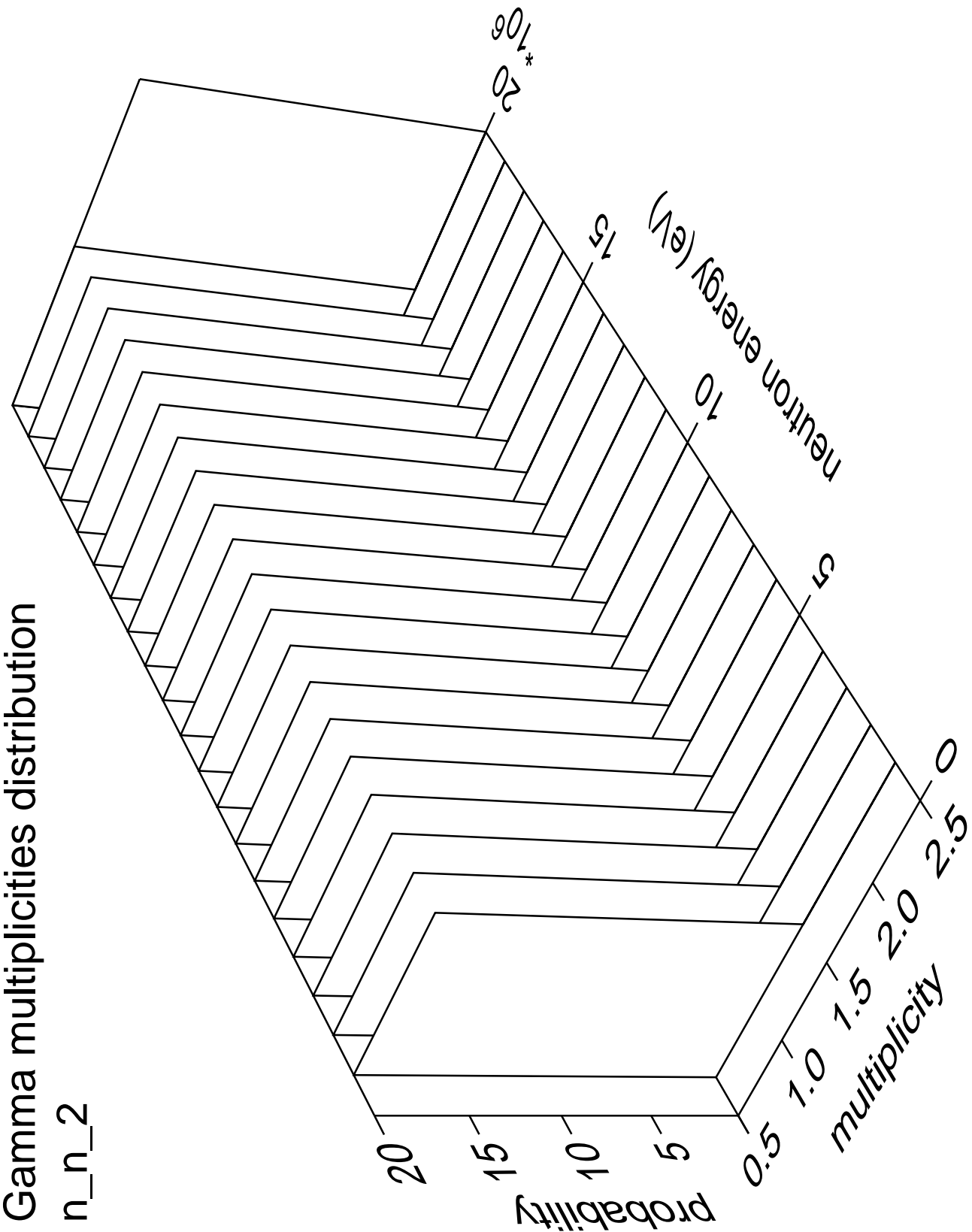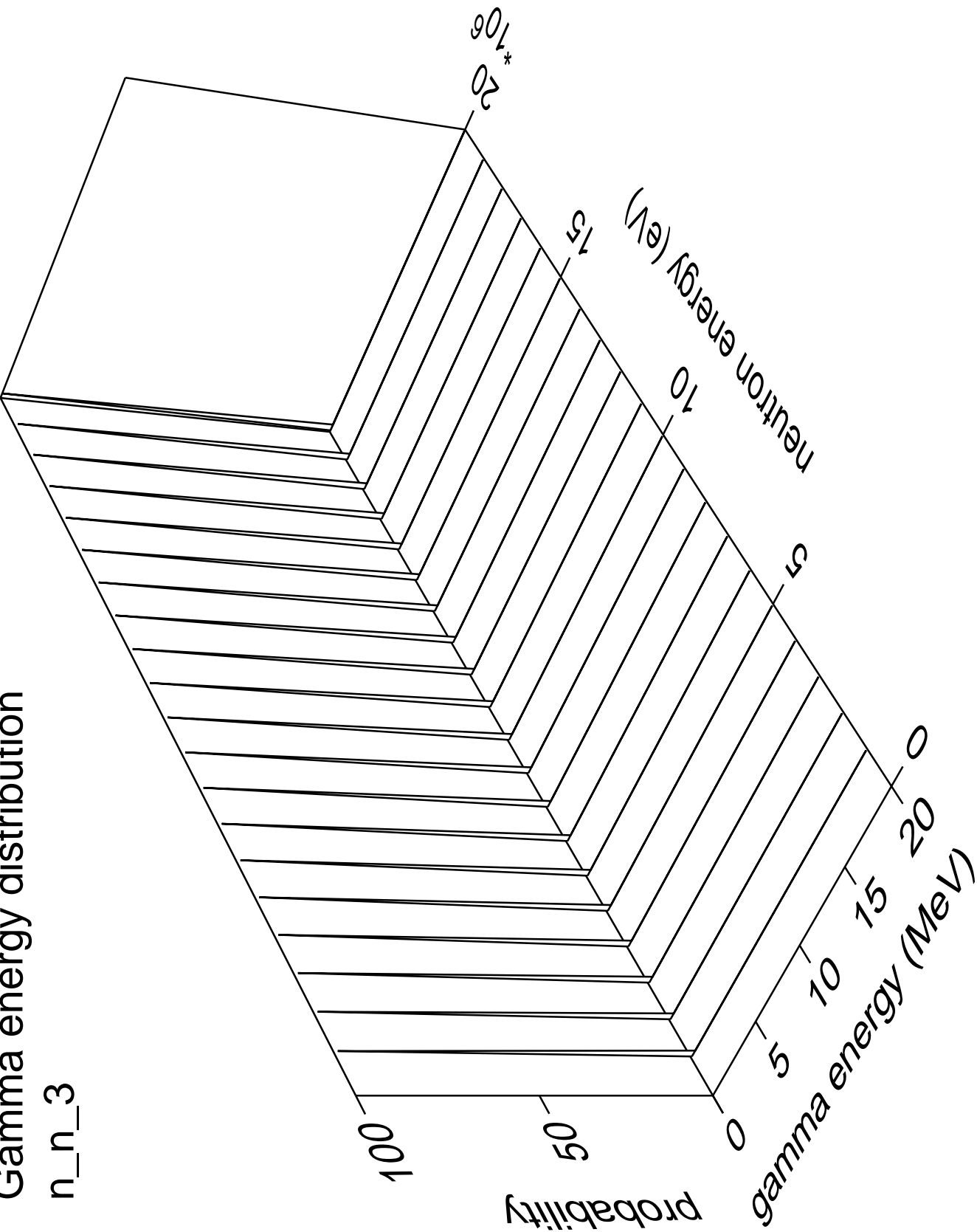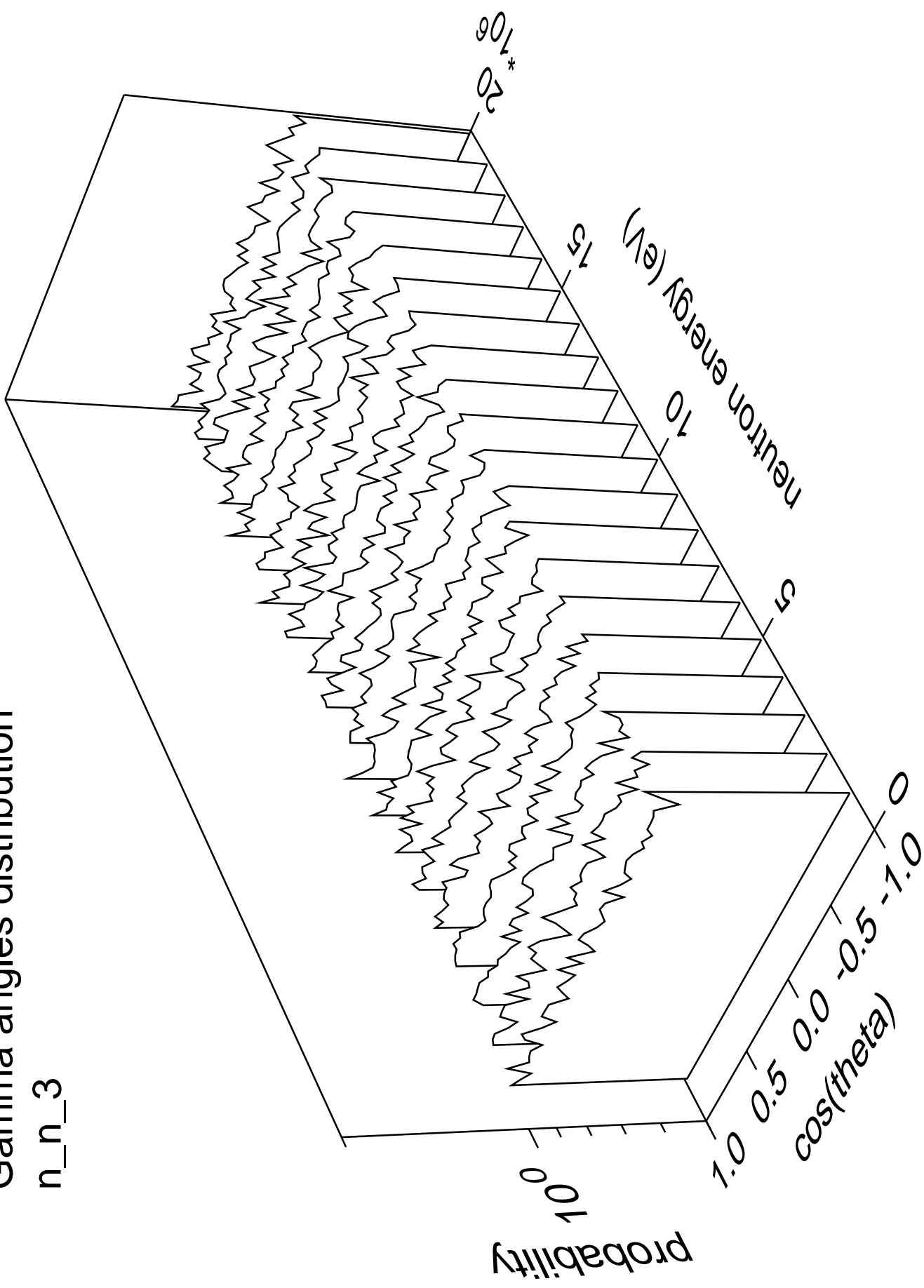
Gamma multiplicities distribution
n_n_3

Gamma energy distribution
n_n_4

probability

100

50

0

neutron energy (eV)

20
*10⁶

15

10

5

gamma energy (MeV)

0   5   10   15   20

0

Gamma angles distribution
n_n_4

probability

neutron energy (eV)

cos(theta)

20 *10⁶

15

10

5

0

1.0 0.5 0.0 -0.5 -1.0
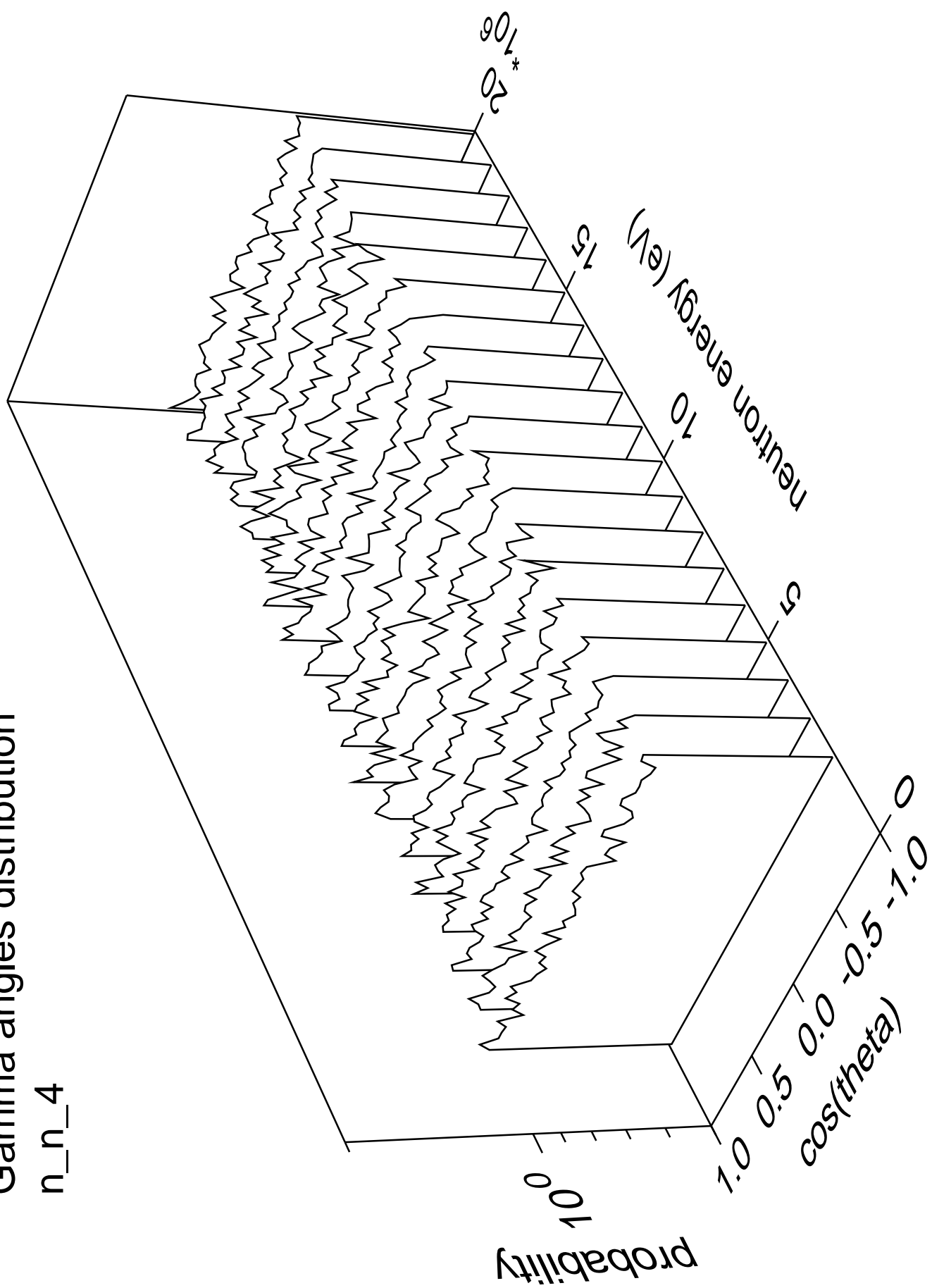
Gamma multiplicities distribution
n_n_4

Gamma energy distribution
n_n_5

probability

neutron energy (eV)

gamma energy (MeV)

20 *10⁶

15

10

5

0

5

10

15

20

50

100

Gamma angles distribution
n_n_5

probability

cos(theta)

neutron energy (eV)

1.0 0.5 0.0 -0.5 -1.0

0 5 10 15 20 *10⁶
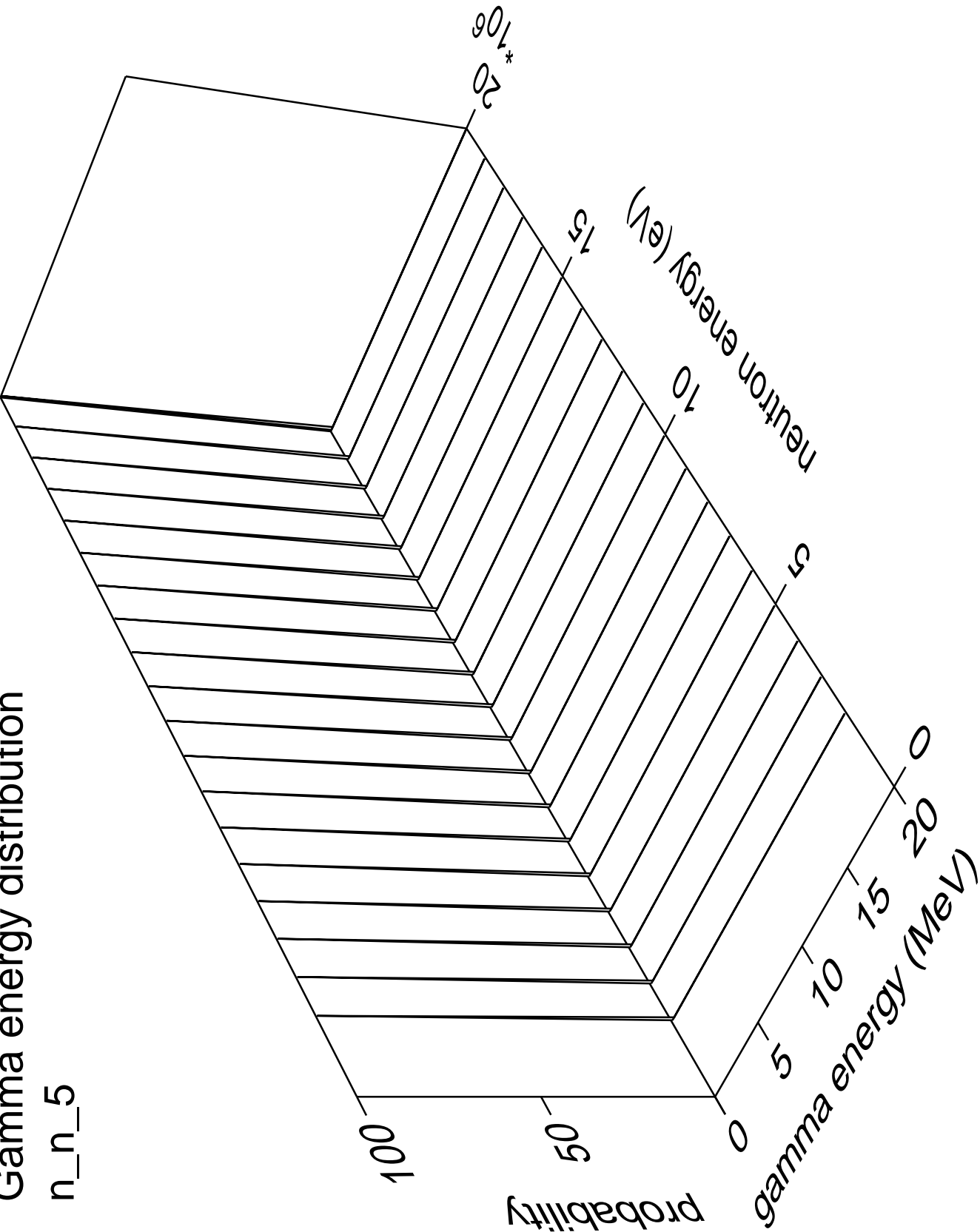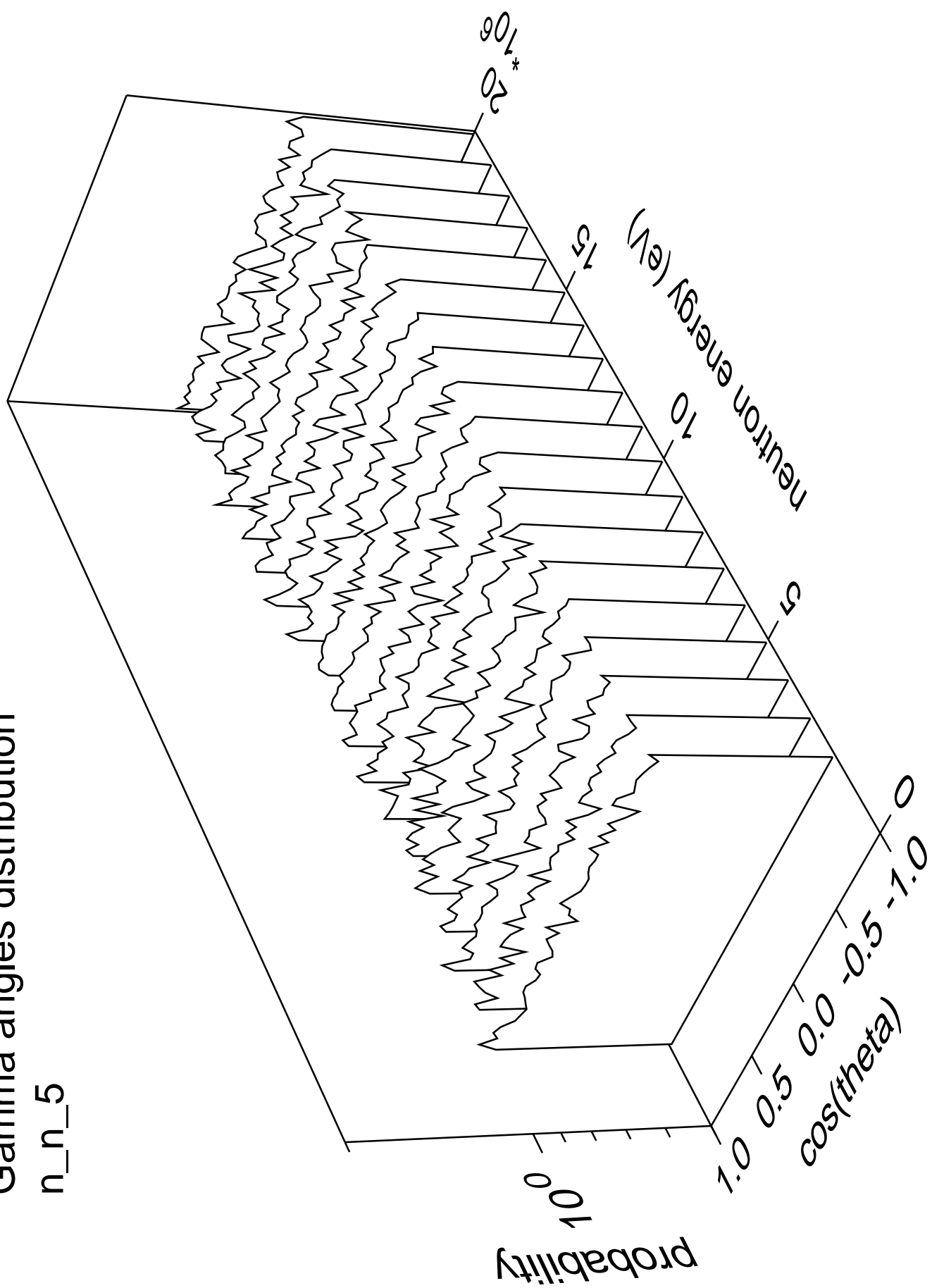
Gamma multiplicities distribution
n_n_5

Gamma energy distribution
n_n_6

probability

100

50

gamma energy (MeV)

0   5   10   15   20

neutron energy (eV)

5   10   15   20   *10⁶

0

Gamma angles distribution
n_n_6

probability

cos(theta)

neutron energy (eV)

*10⁶
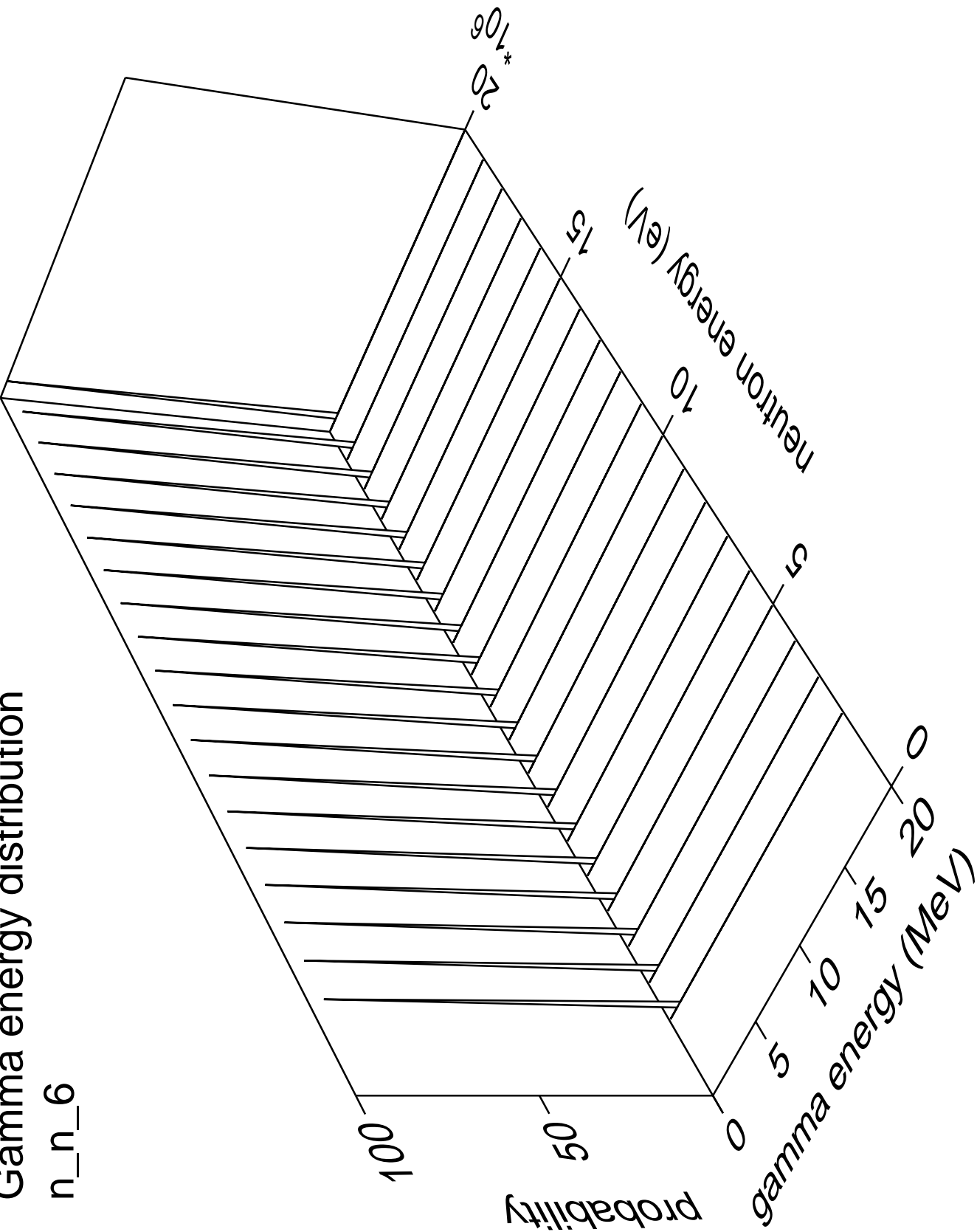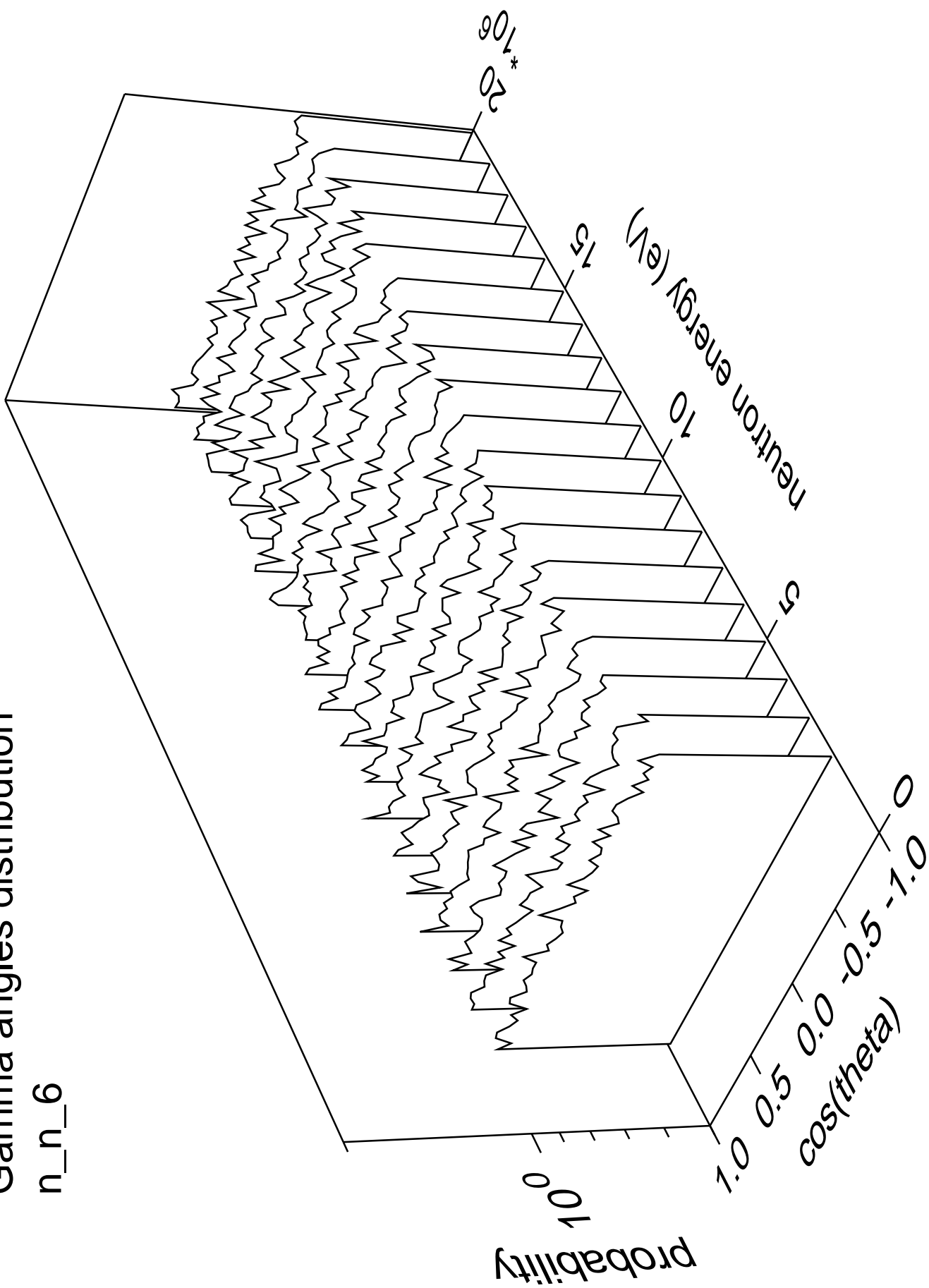
Gamma multiplicities distribution
n_n_6

Gamma energy distribution
n_n_7
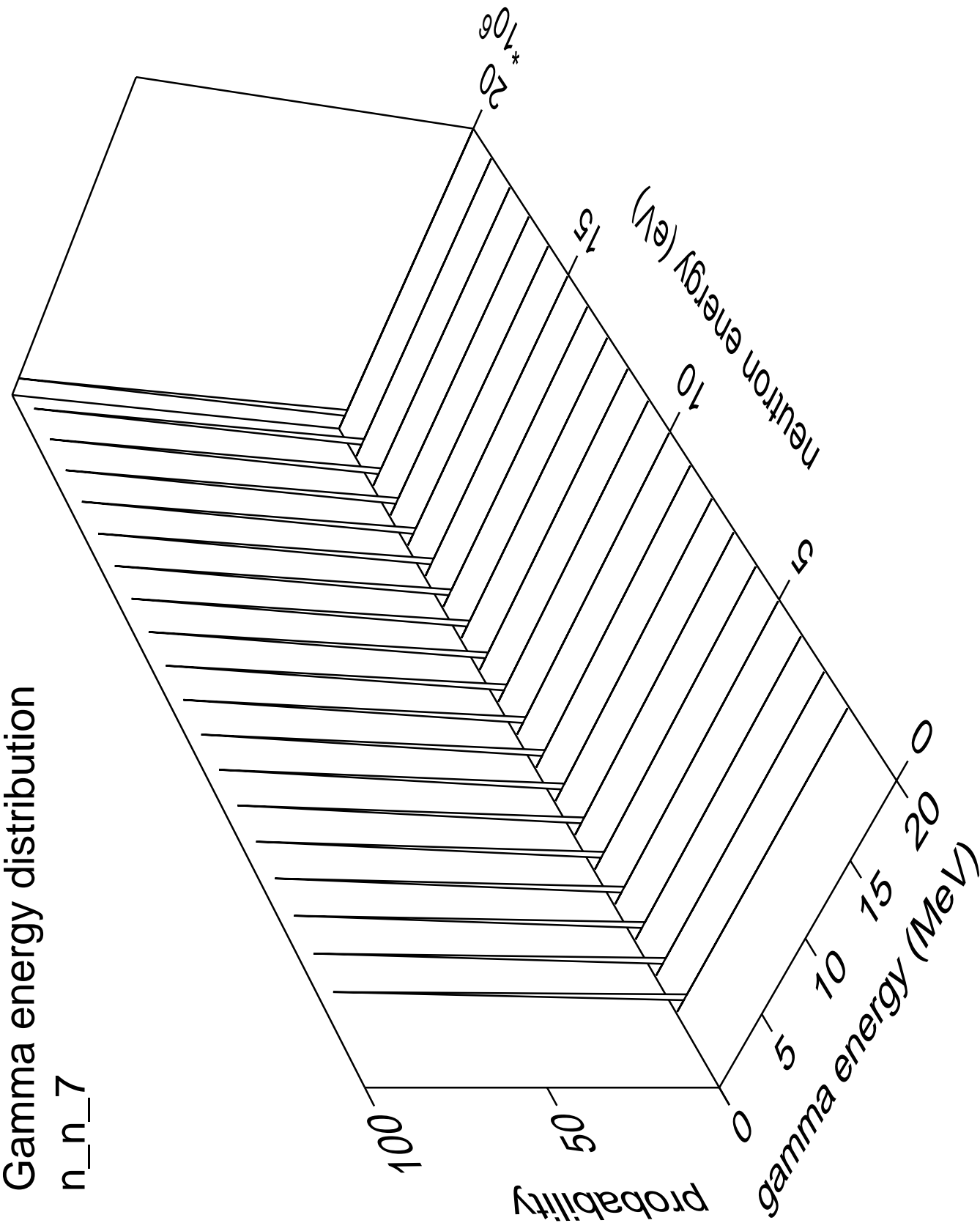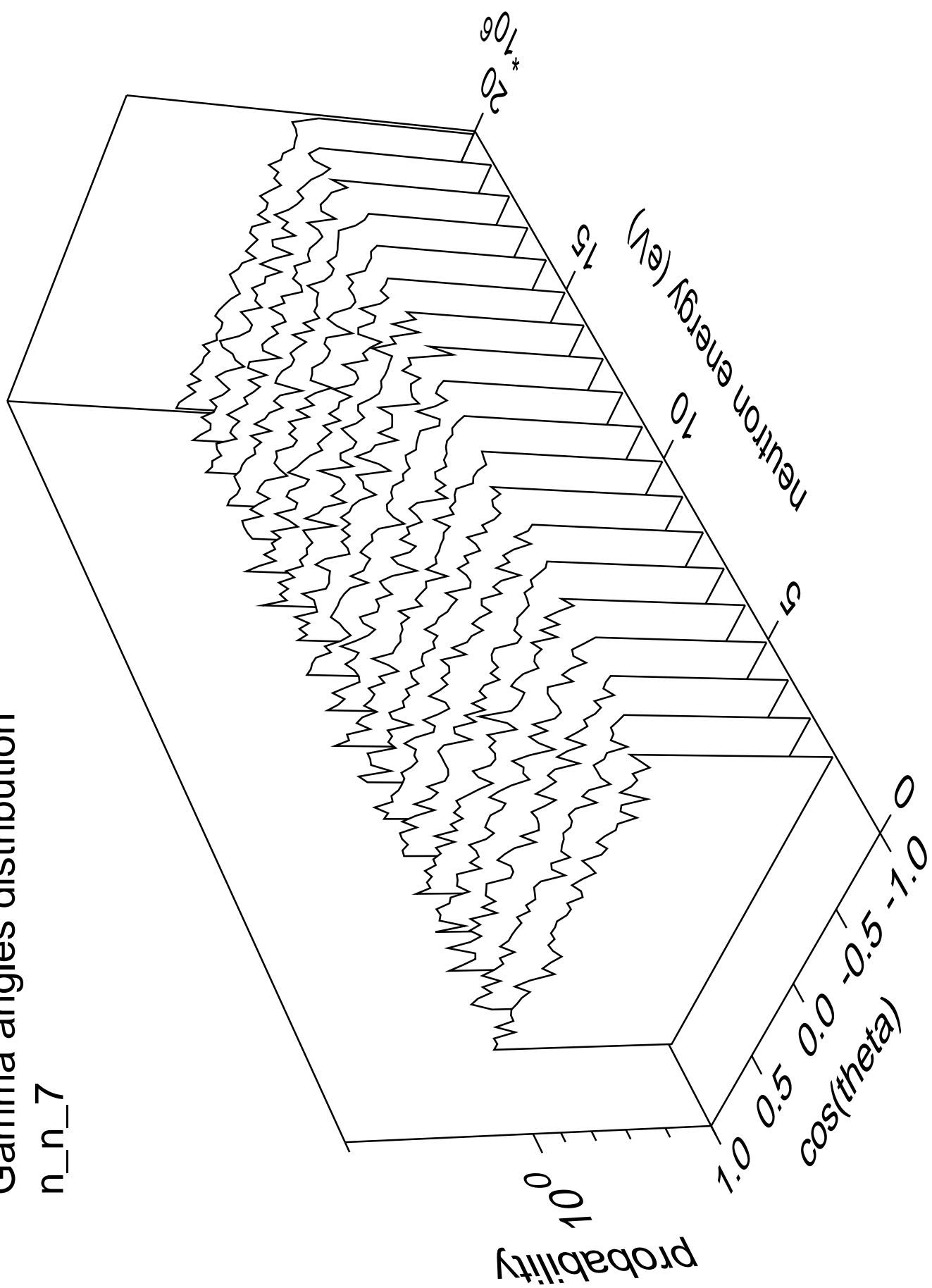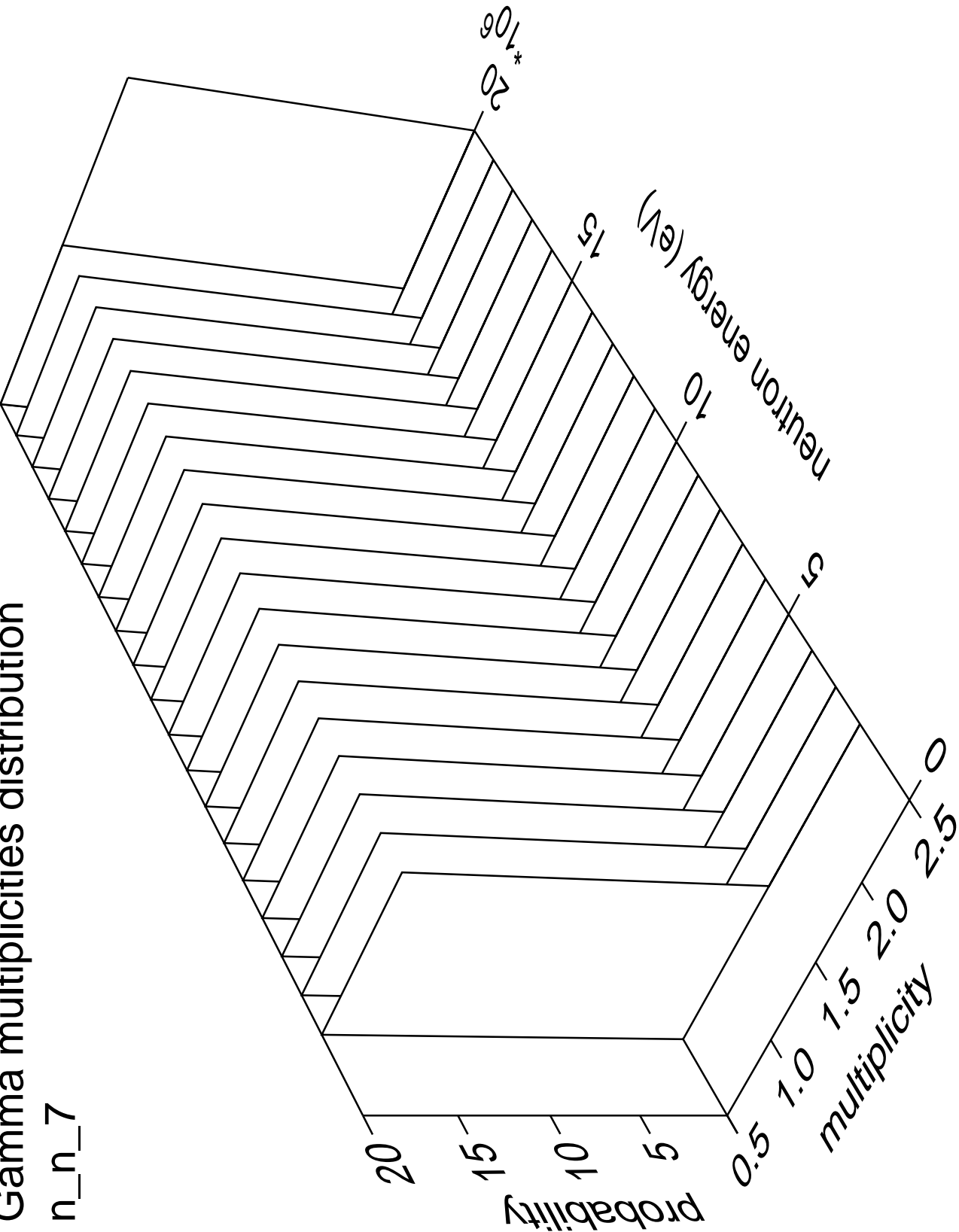
neutron energy (eV)
*10⁶

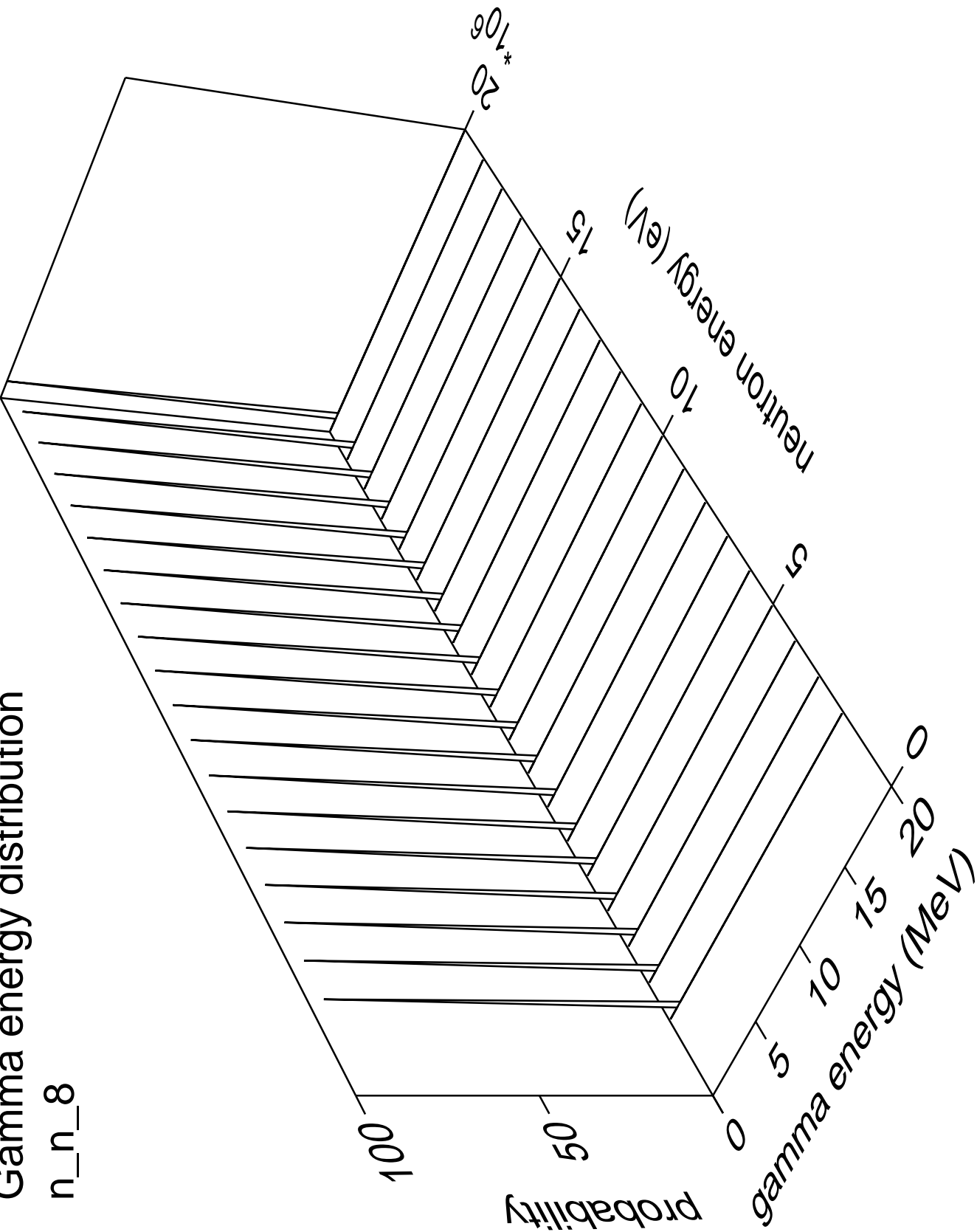probability

gamma energy (MeV)

Gamma angles distribution
n_n_7

probability

neutron energy (eV)

cos(theta)

20 *10⁶

15

10

5

0

1.0 0.5 0.0 -0.5 -1.0

10⁰

Gamma multiplicities distribution
n_n_7

neutron energy (eV)

multiplicity

probability

Gamma energy distribution
n_n_8

probability

gamma energy (MeV)

neutron energy (eV)

20 *10⁶

15

10

5

0

100

50

0

5

10

15

20

Gamma angles distribution
n_n_8

neutron energy (eV)

cos(theta)

probability

20 *10⁶

15

10

5

0

1.0 0.5 0.0 -0.5 -1.0

10⁰

Gamma multiplicities distribution
n_n_8

probability

neutron energy (eV)

multiplicity

20 *10⁶

Gamma energy distribution
n_n_9

probability

neutron energy (eV)

gamma energy (MeV)

80 60 40 20

20 *10⁶

15

10

5

0

20 15 10 5 0

Gamma angles distribution
n_n_9

neutron energy (eV)

cos(theta)

probability
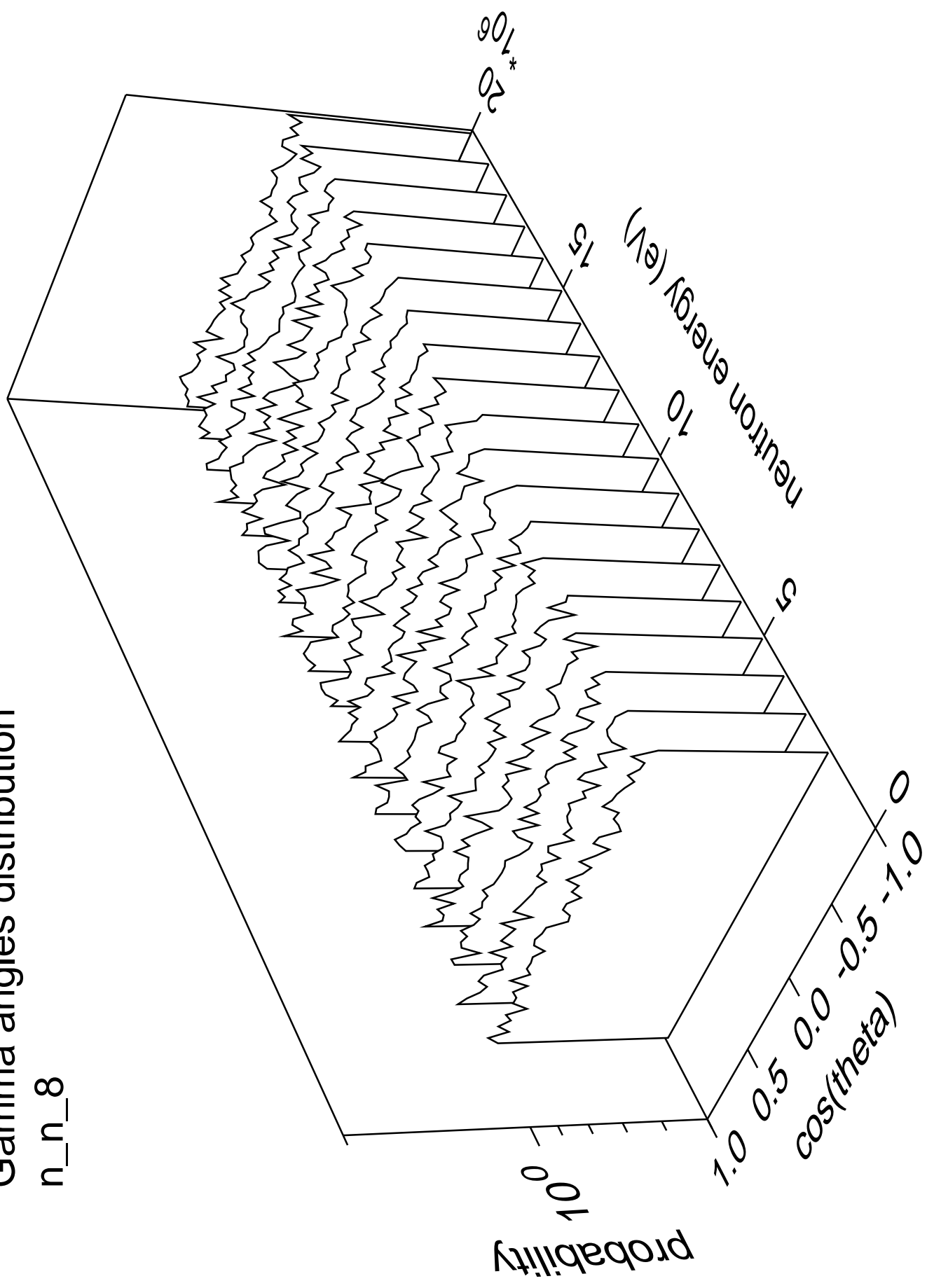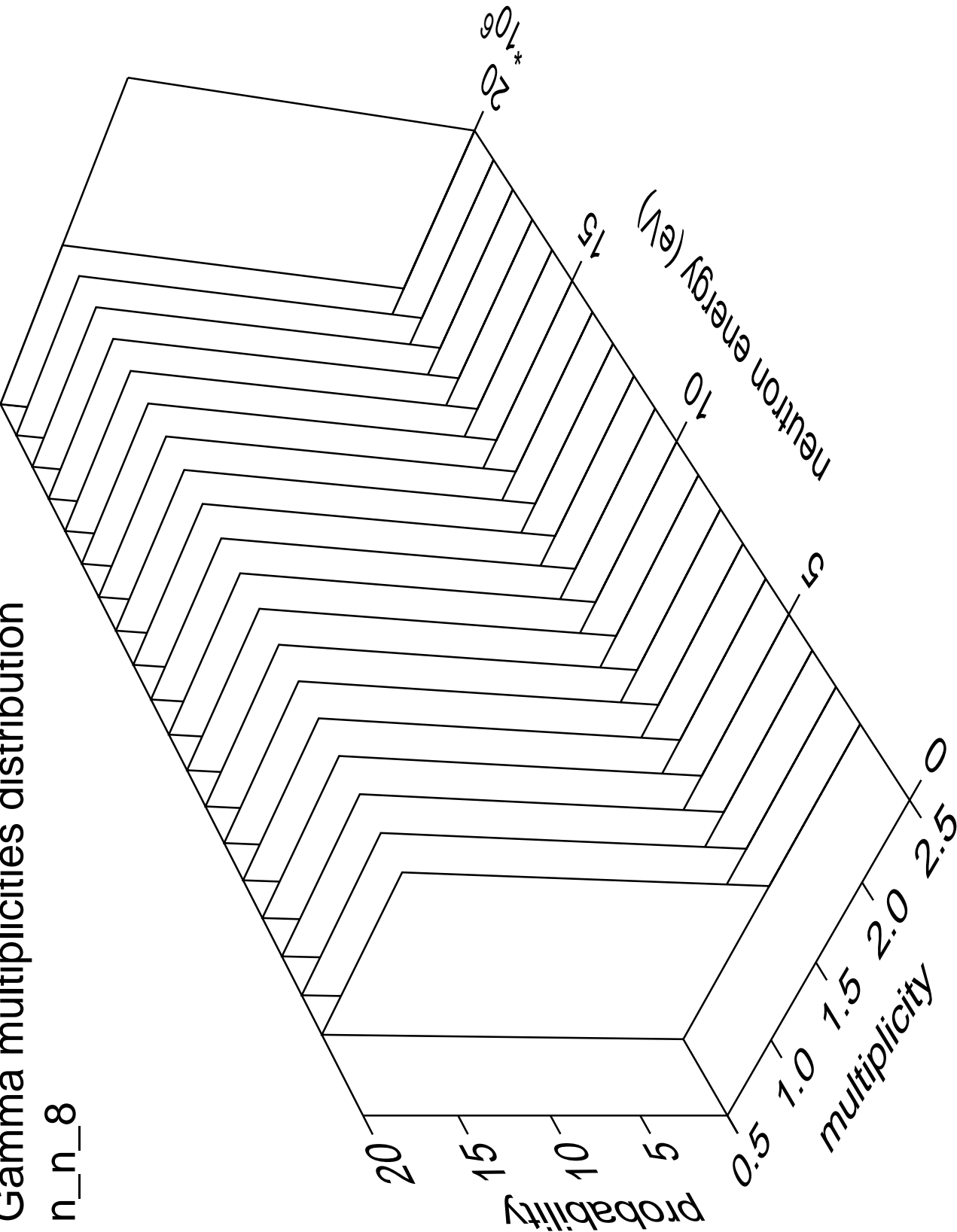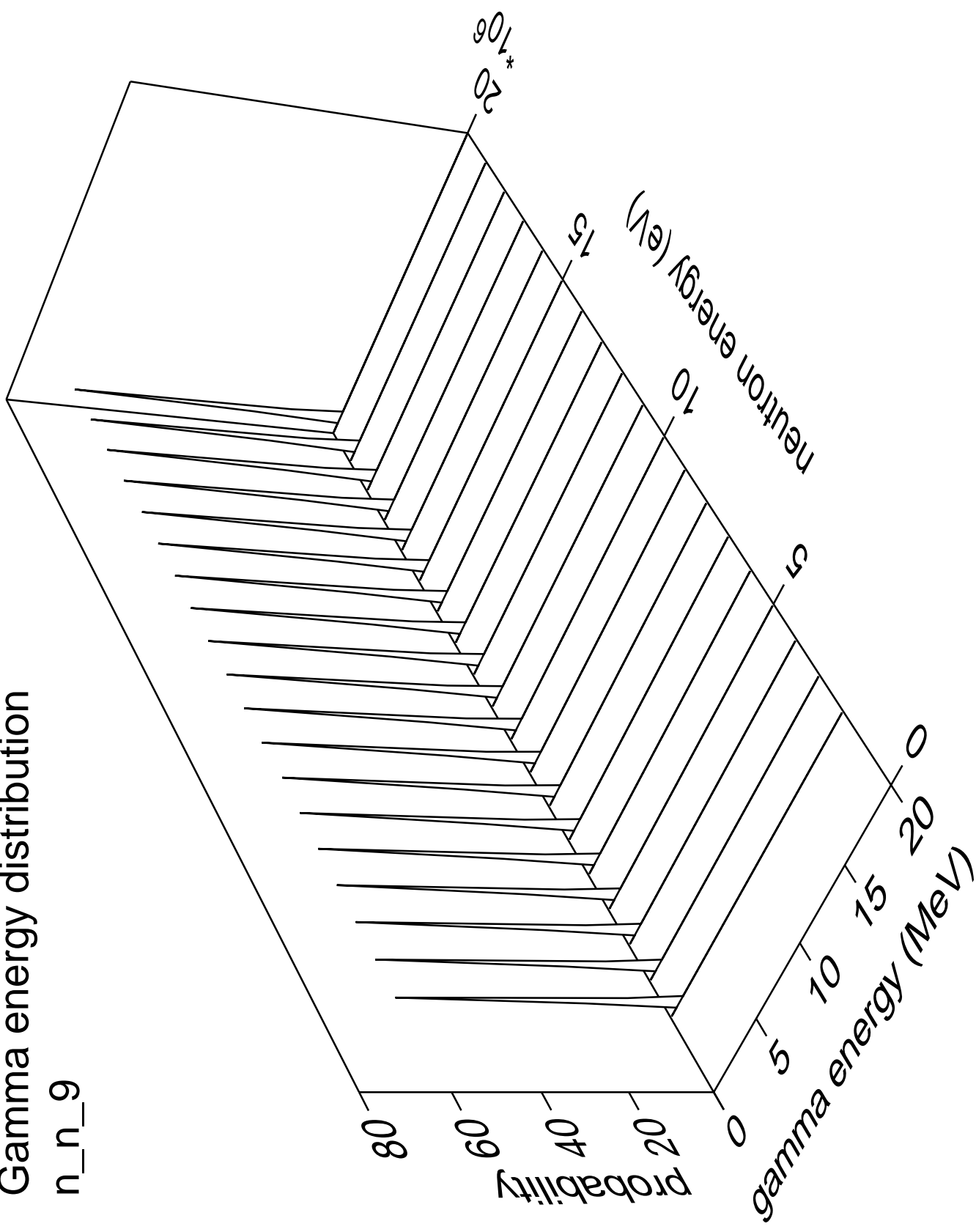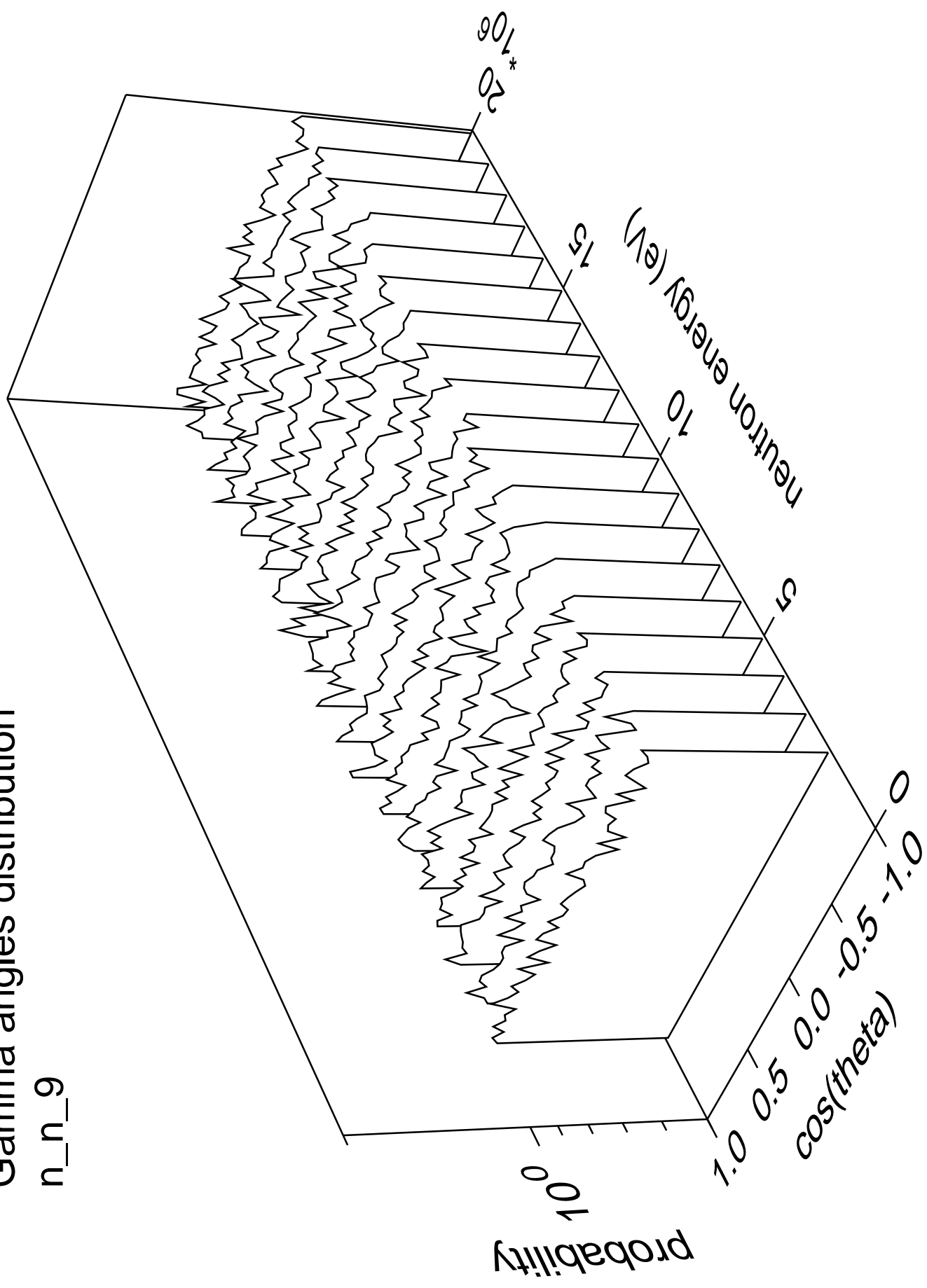
Gamma multiplicities distribution
n_n_9

Gamma energy distribution
n_n_10
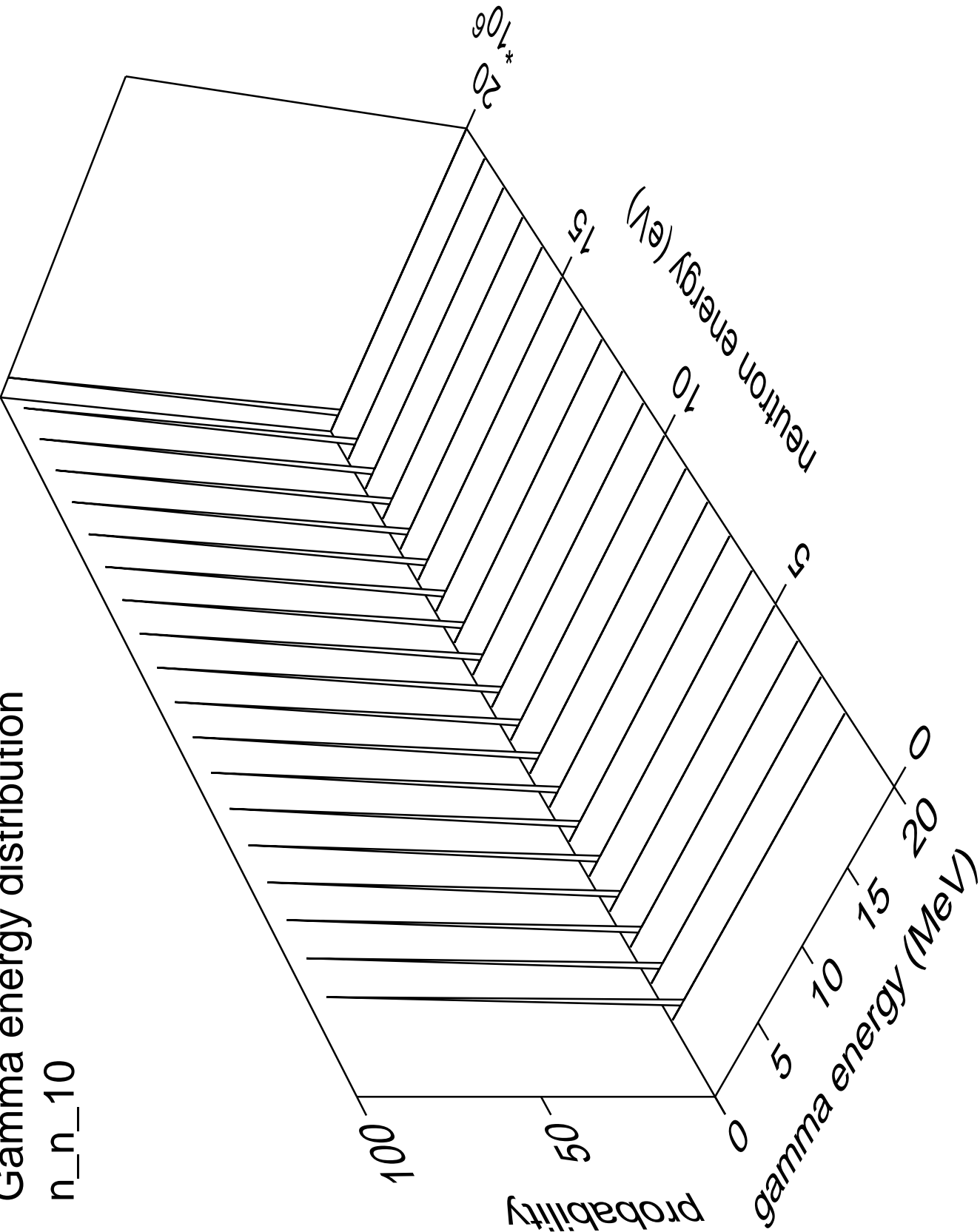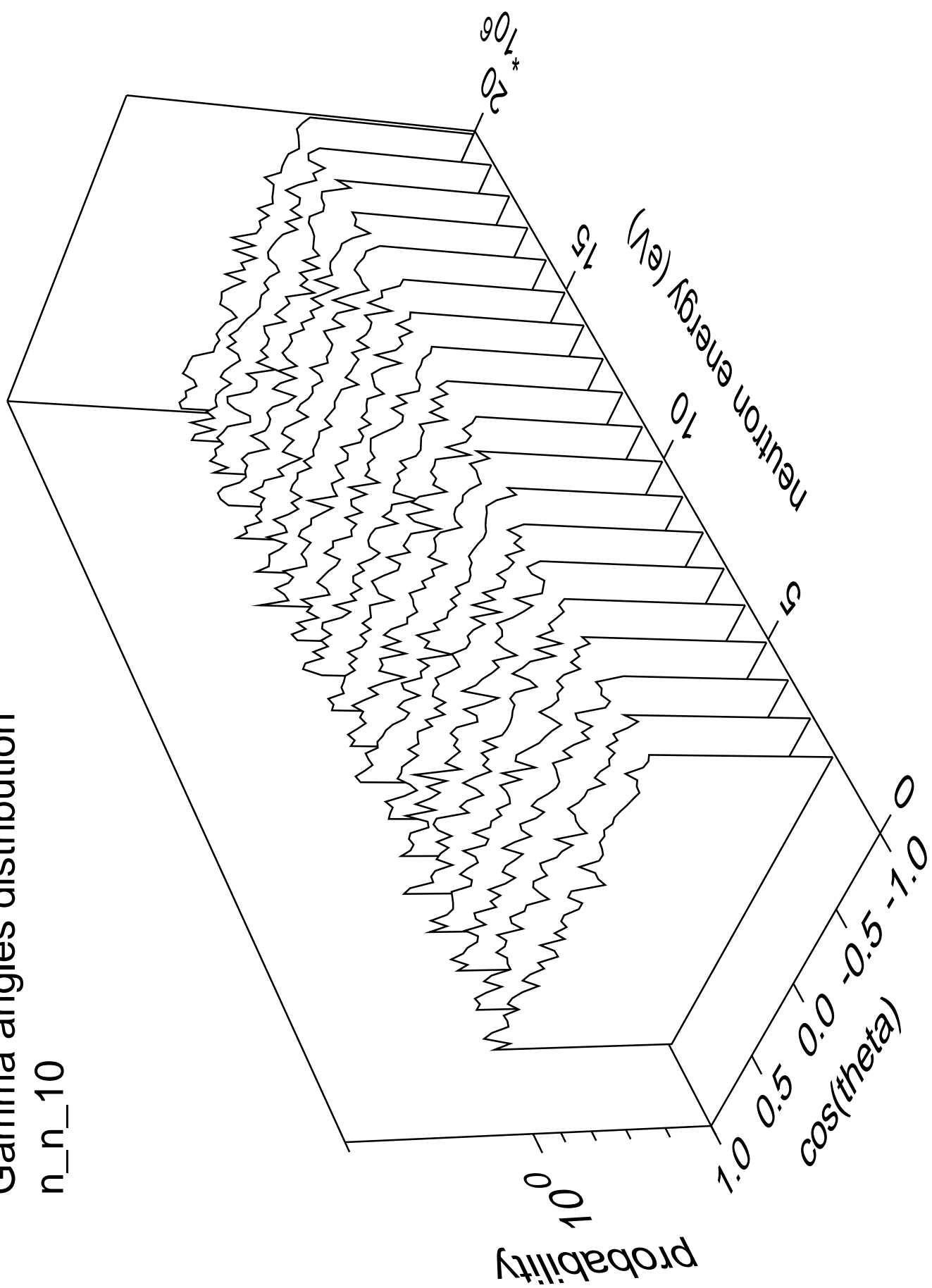
probability

neutron energy (eV)

gamma energy (MeV)

20 *10⁶

15

10

5

0

5

10

15

20

50

100

Gamma angles distribution
n_n_10

neutron energy (eV)

cos(theta)

probability

Gamma multiplicities distribution
n_n_10

neutron energy (eV)

multiplicity

probability

Gamma energy distribution
n_n_11

probability

neutron energy (eV)

gamma energy (MeV)

20 *10⁶

15

10

5

0

100

50

0

5

10

15

20

Gamma angles distribution
n_n_11

probability

neutron energy (eV)

cos(theta)

20 *10^6

15

10

5

0

10^0

1.0 0.5 0.0 -0.5 -1.0

Gamma multiplicities distribution
n_n_11

neutron energy (eV)

multiplicity

probability
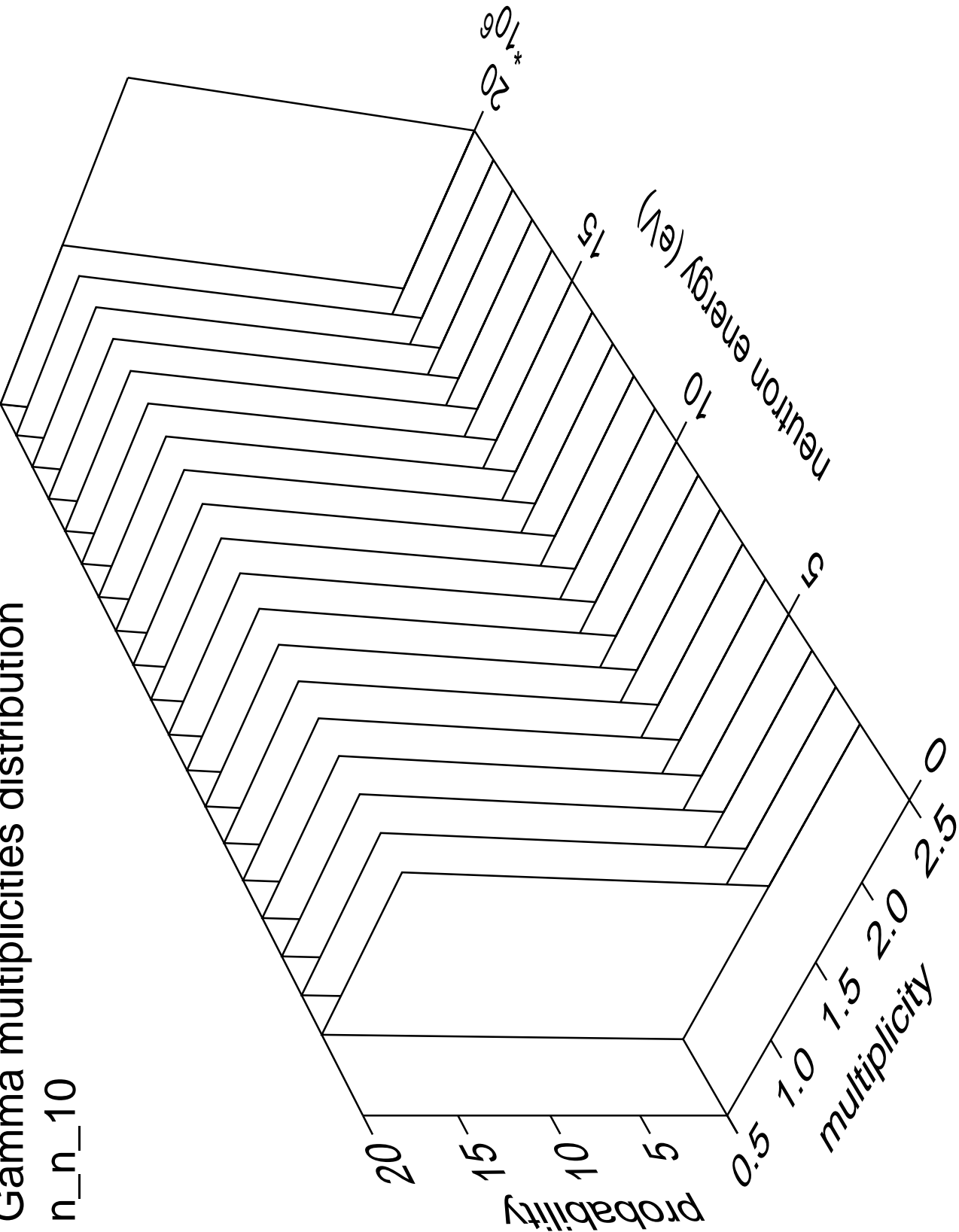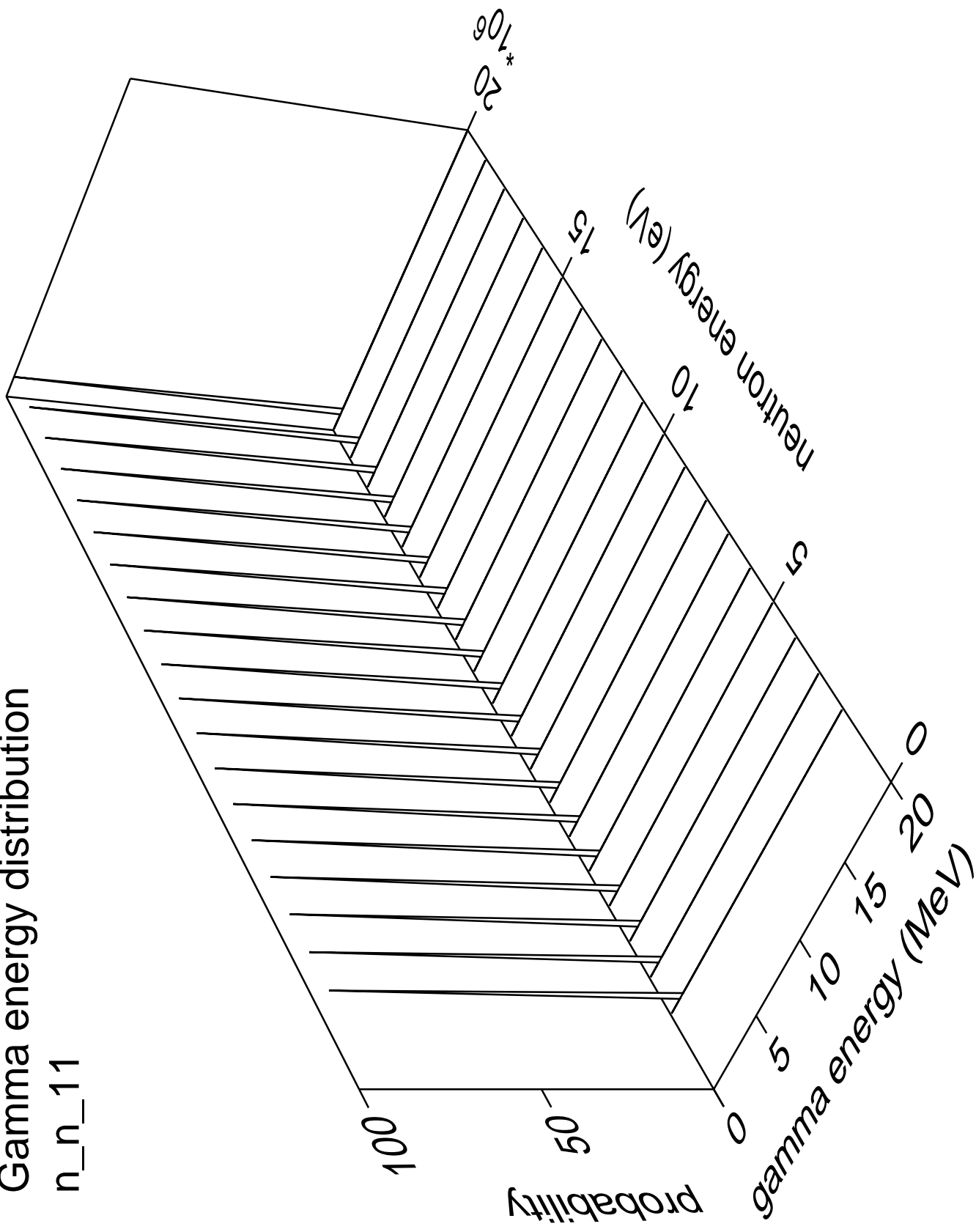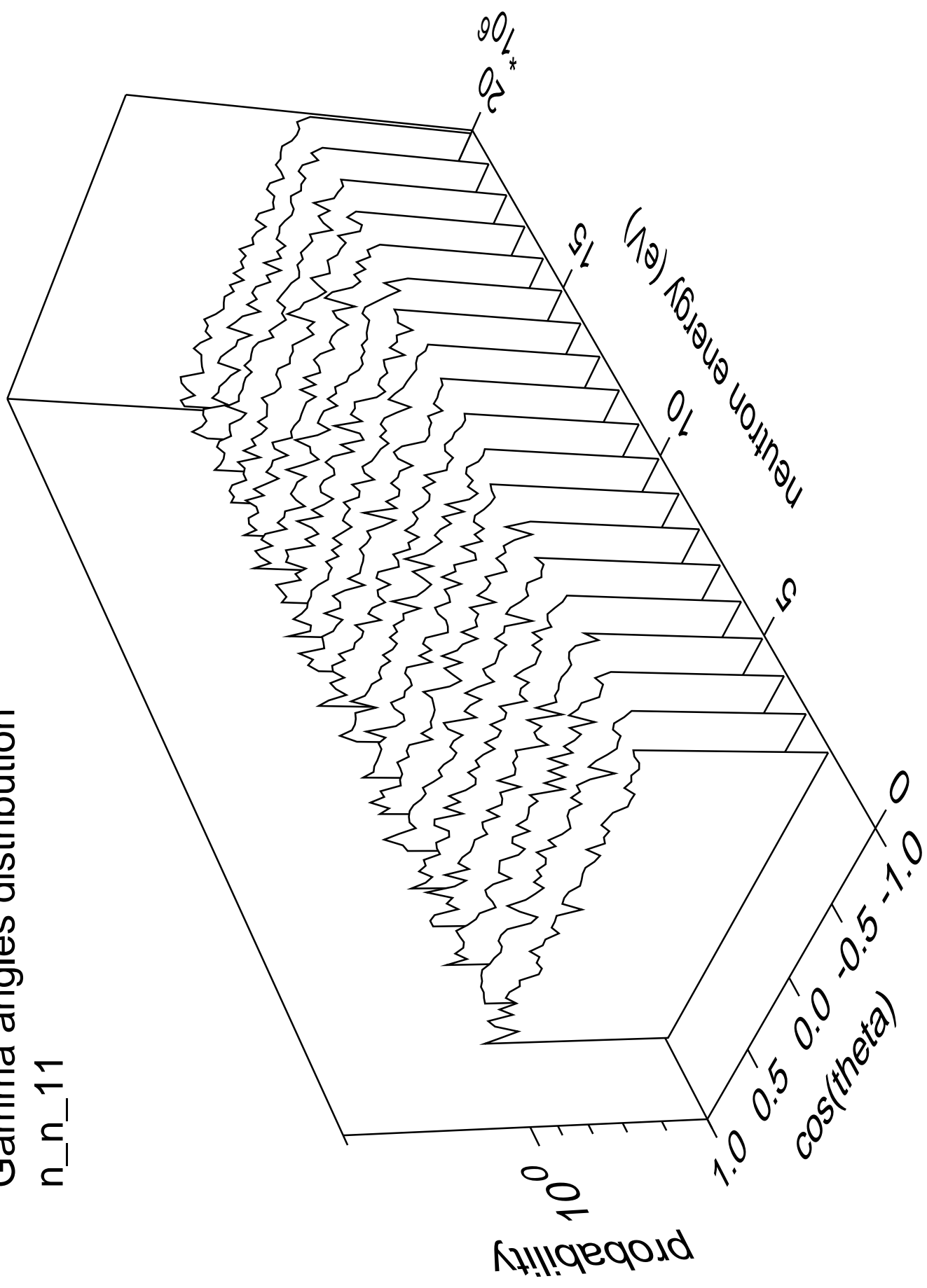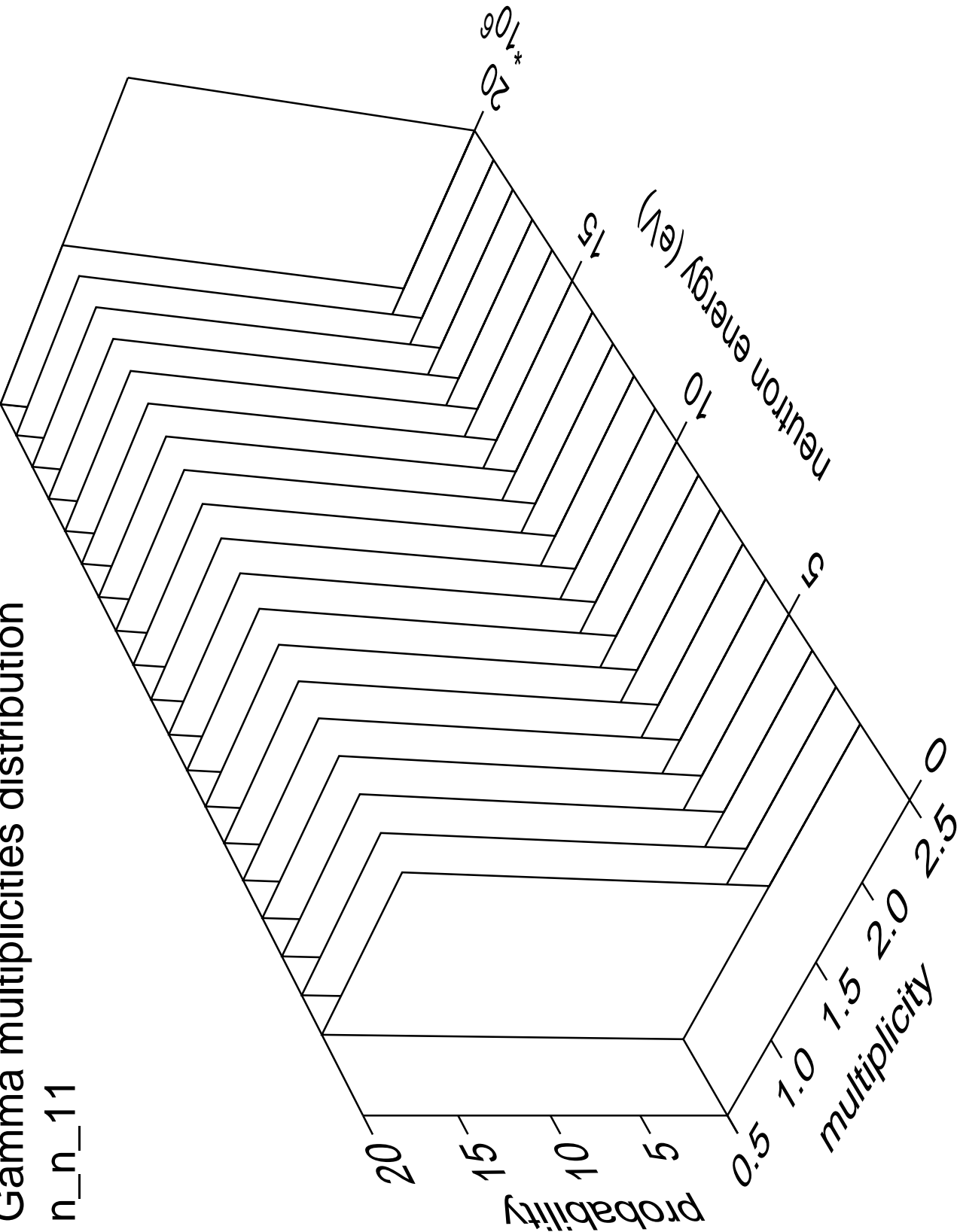
Gamma energy distribution
n_n_12

Gamma angles distribution
n_n_12

neutron energy (eV)

cos(theta)

probability
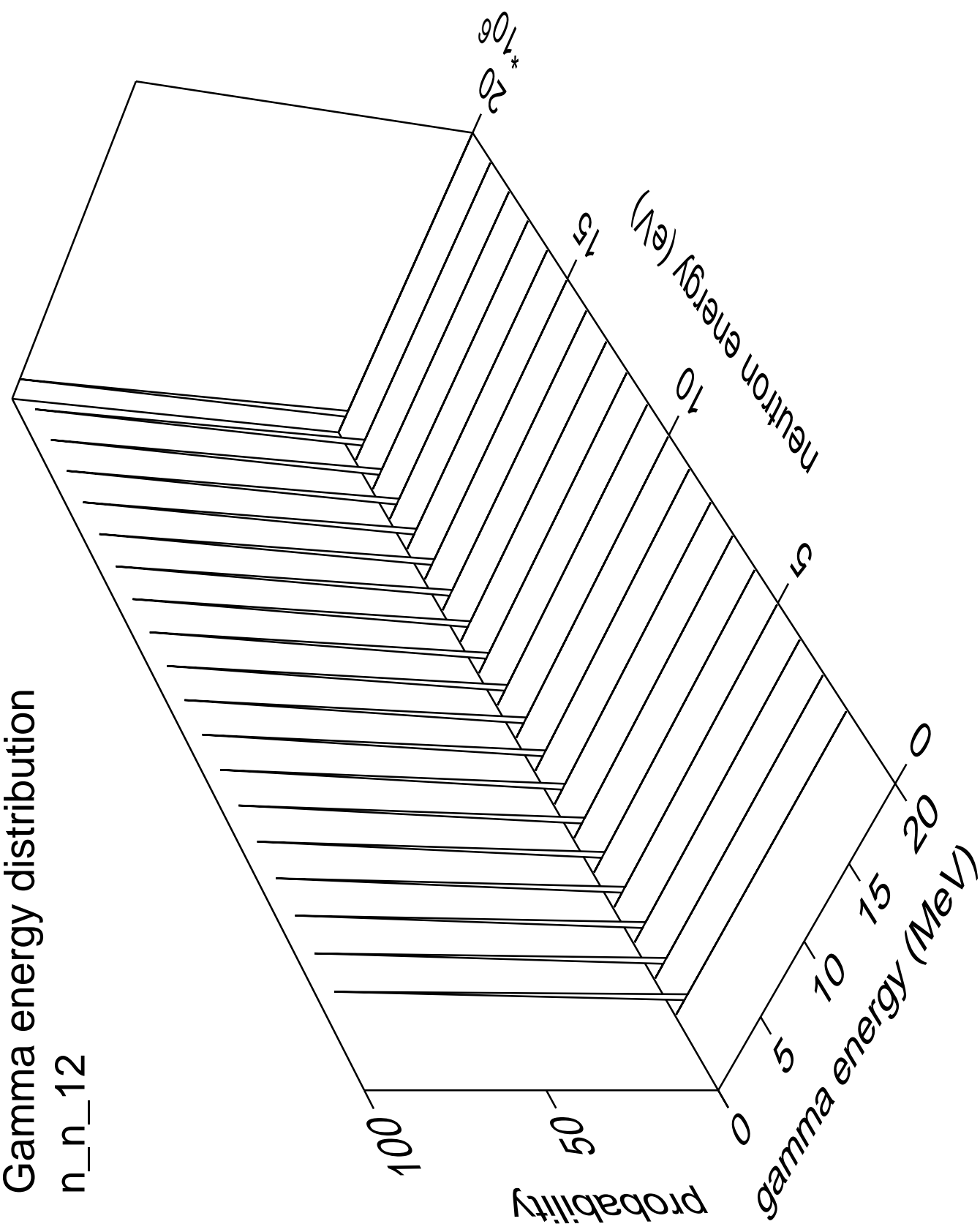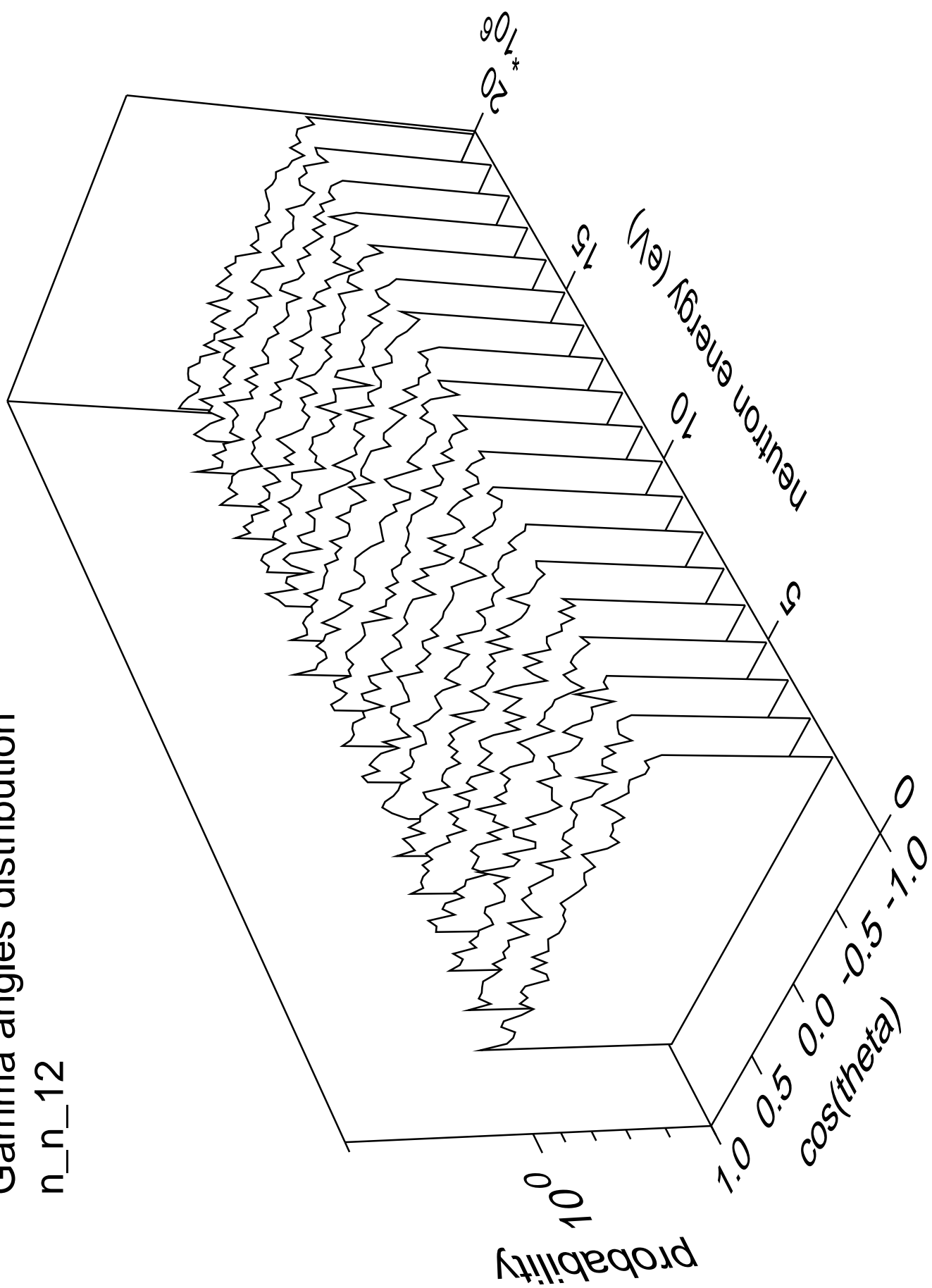
Gamma multiplicities distribution
n_n_12

Gamma energy distribution
n_n_13
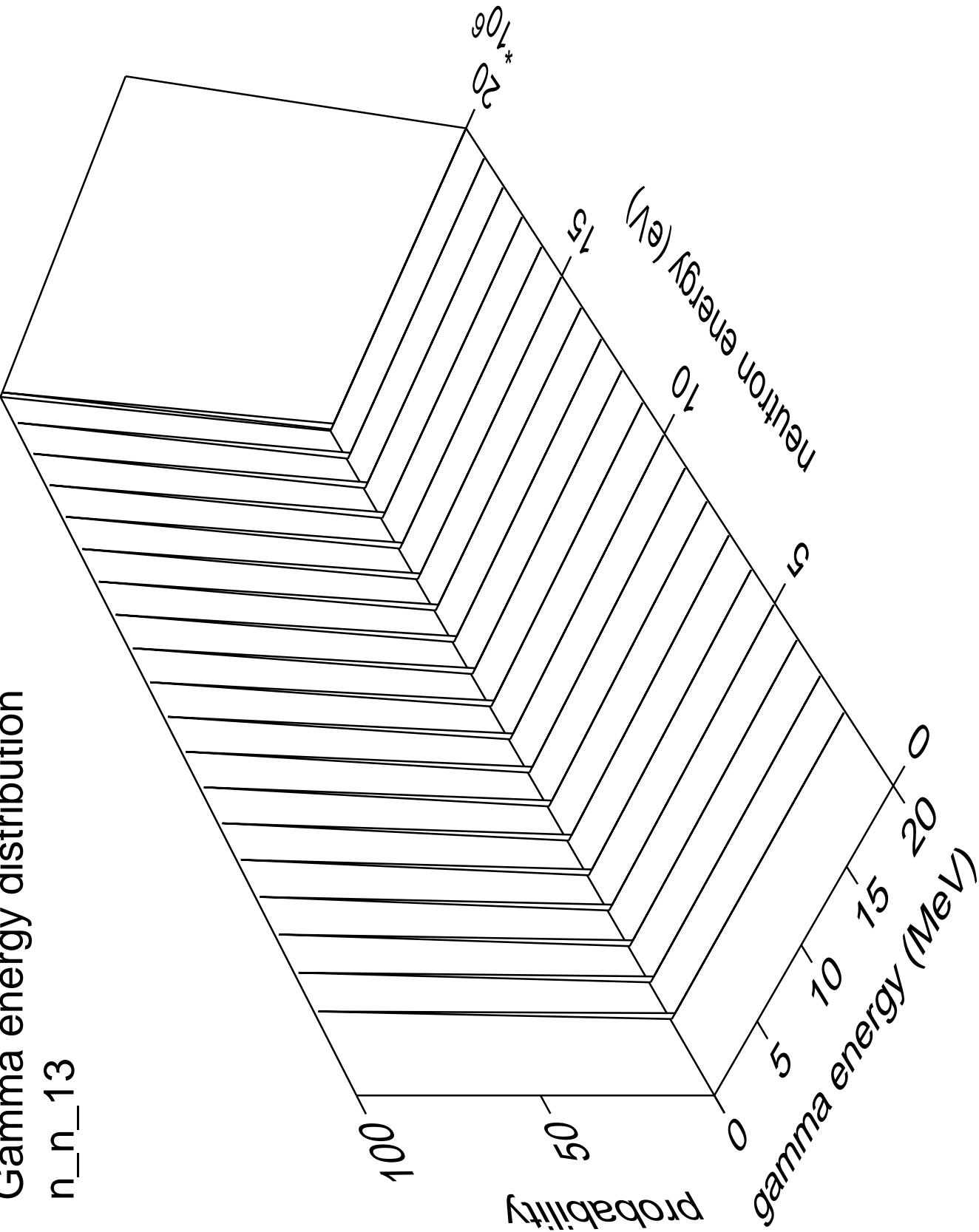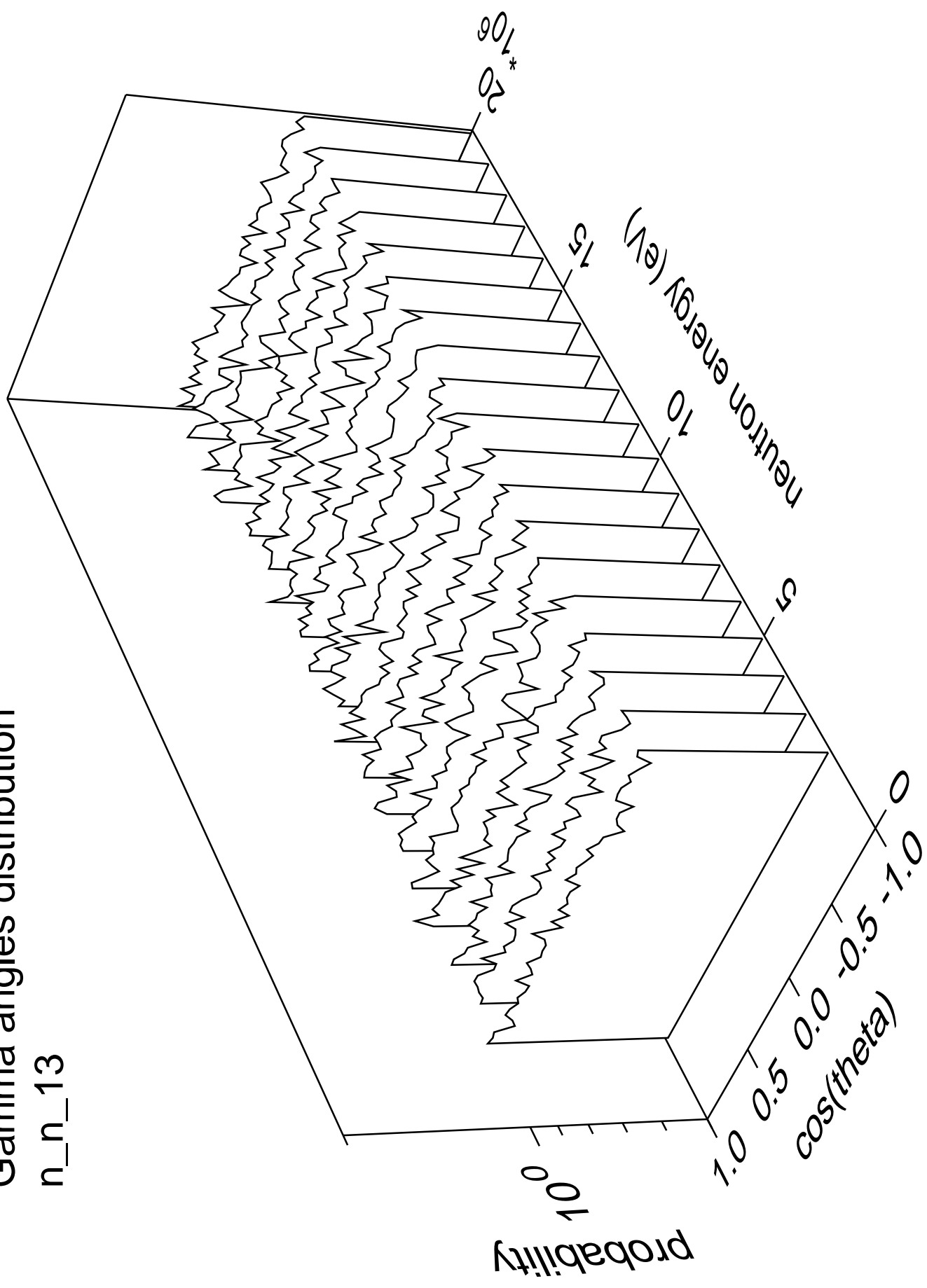
probability

neutron energy (eV)

gamma energy (MeV)

100

50

0

20 *10⁶

15

10

5

0

5

10

15

20

Gamma angles distribution
n_n_13

neutron energy (eV)

cos(theta)

probability

Gamma multiplicities distribution
n_n_13

probability

neutron energy (eV)

multiplicity

Gamma energy distribution
n_n_14

probability

neutron energy (eV)
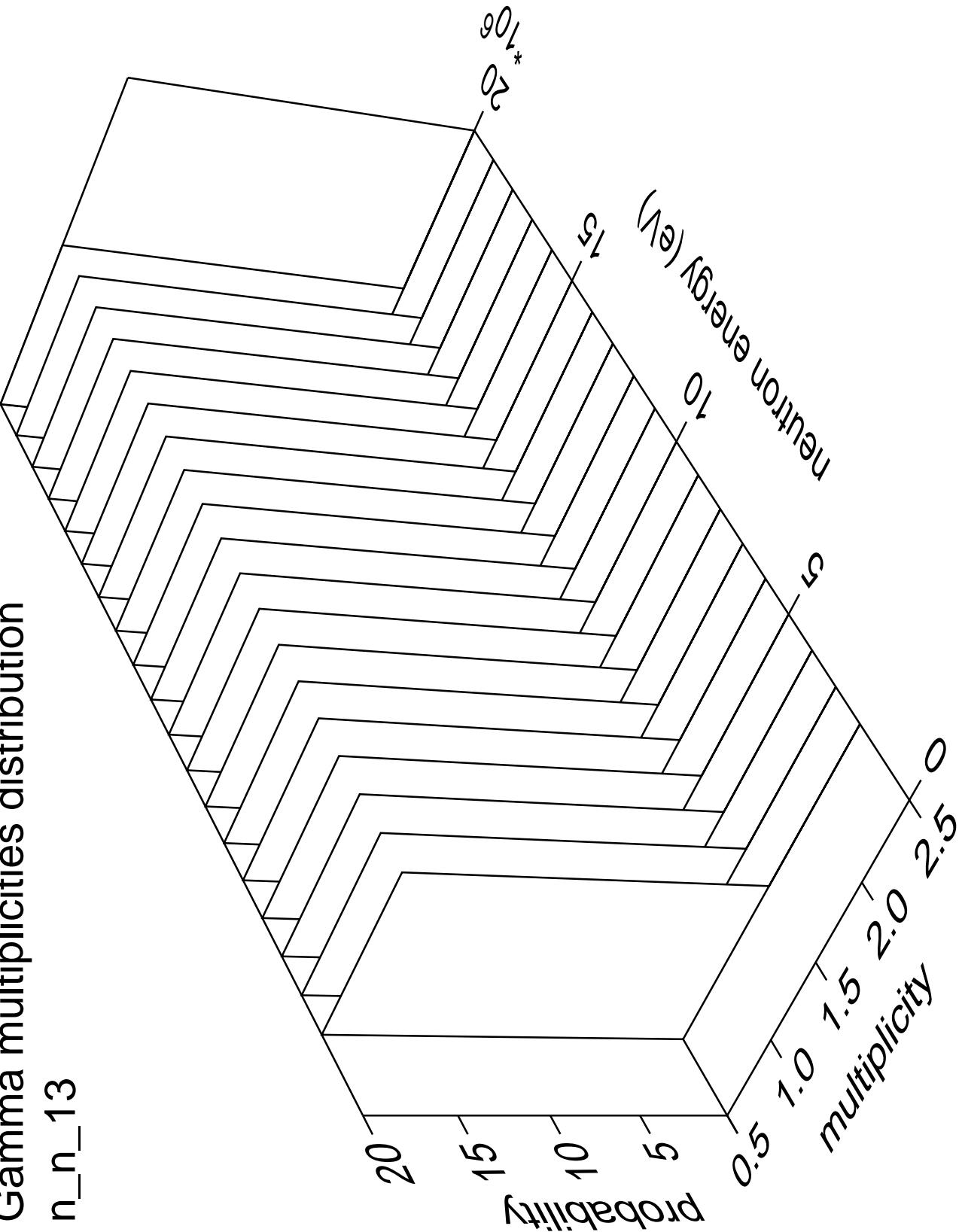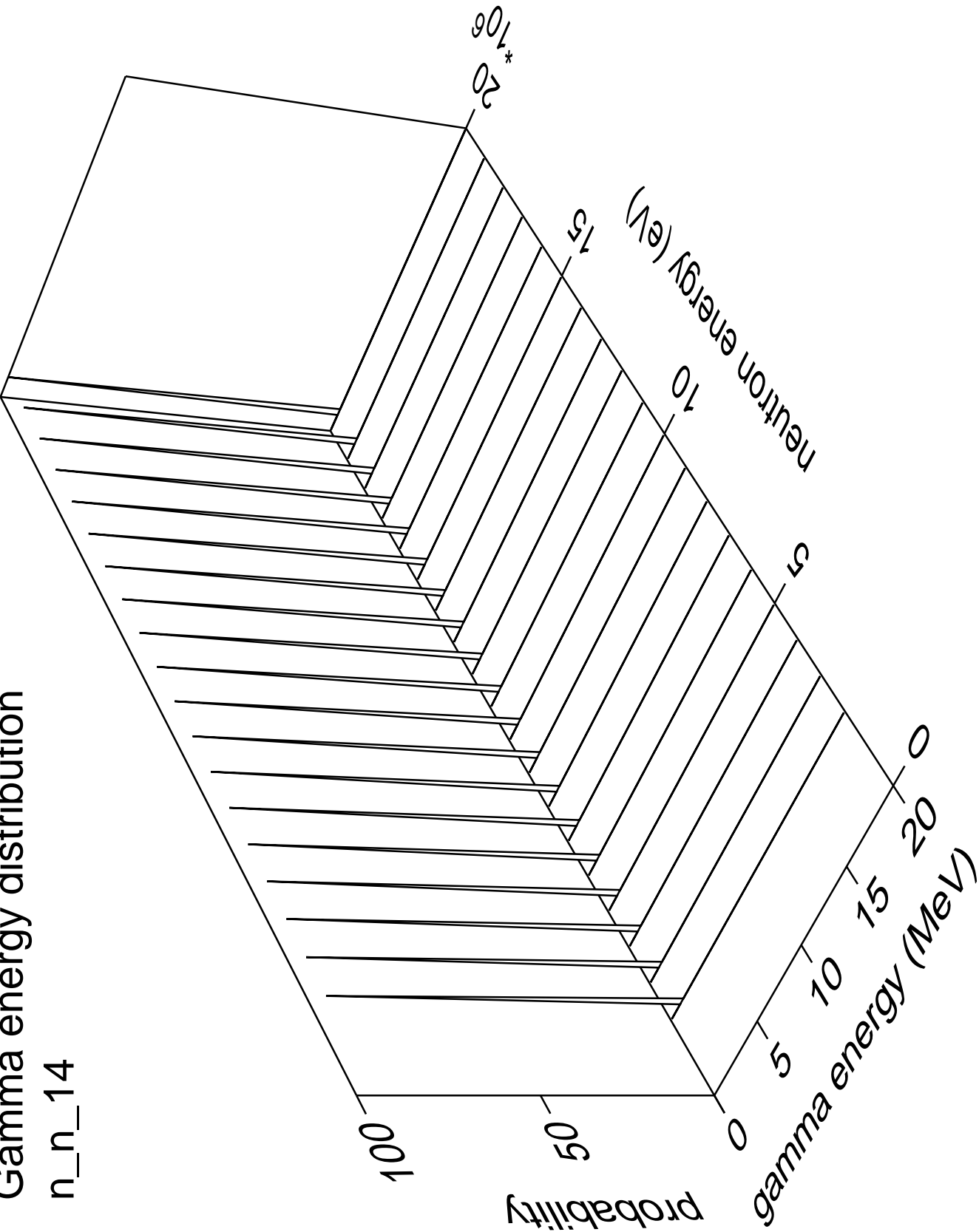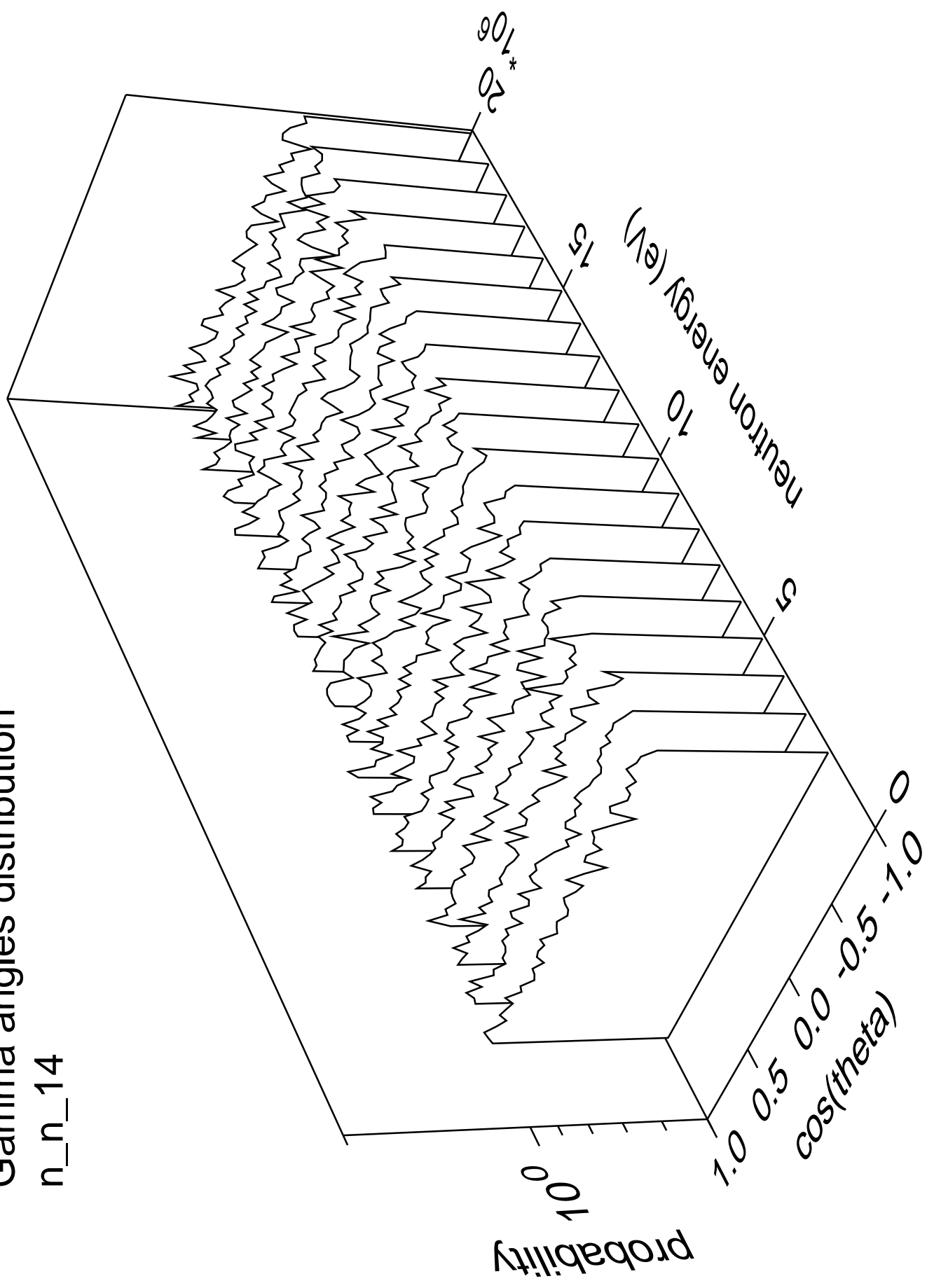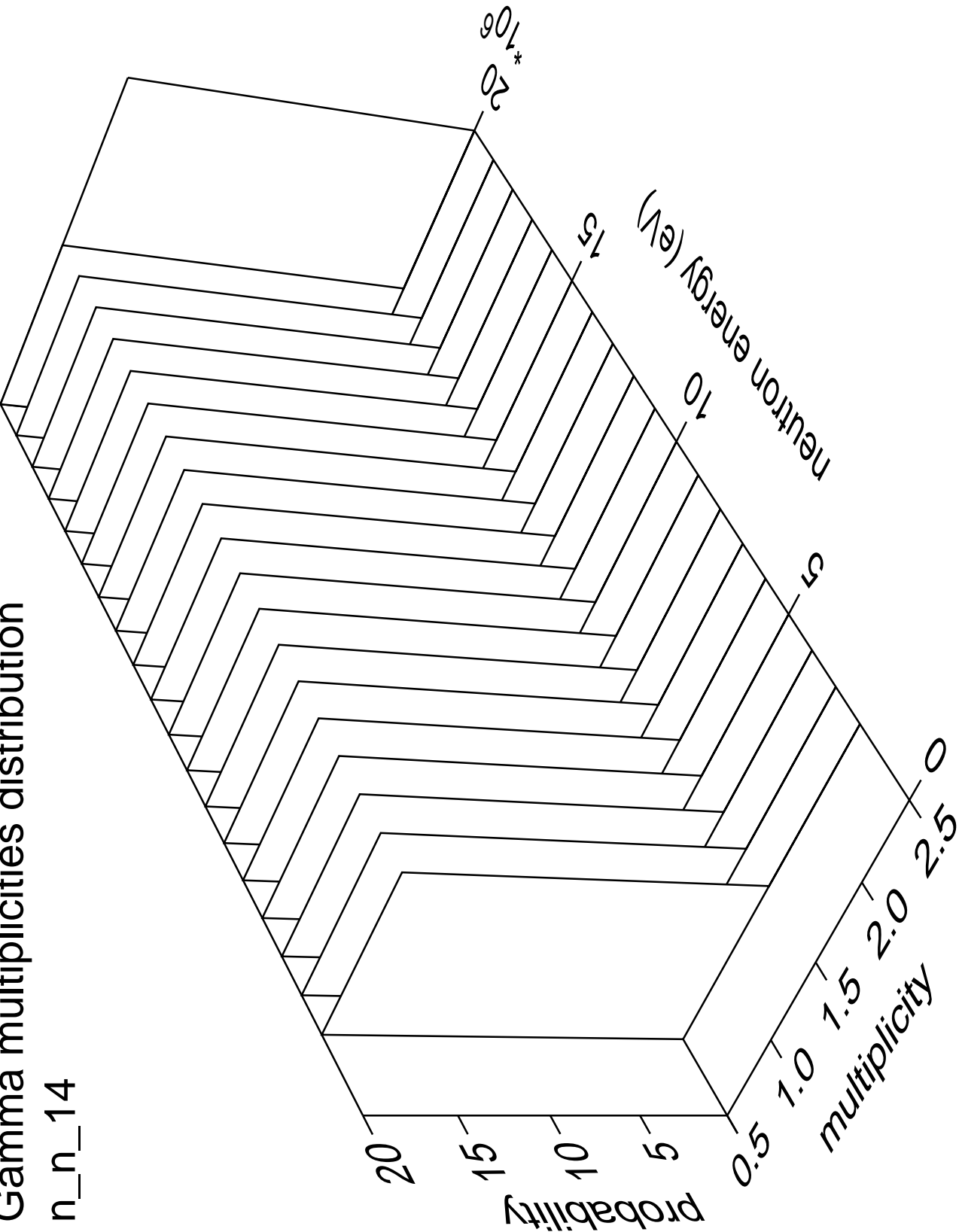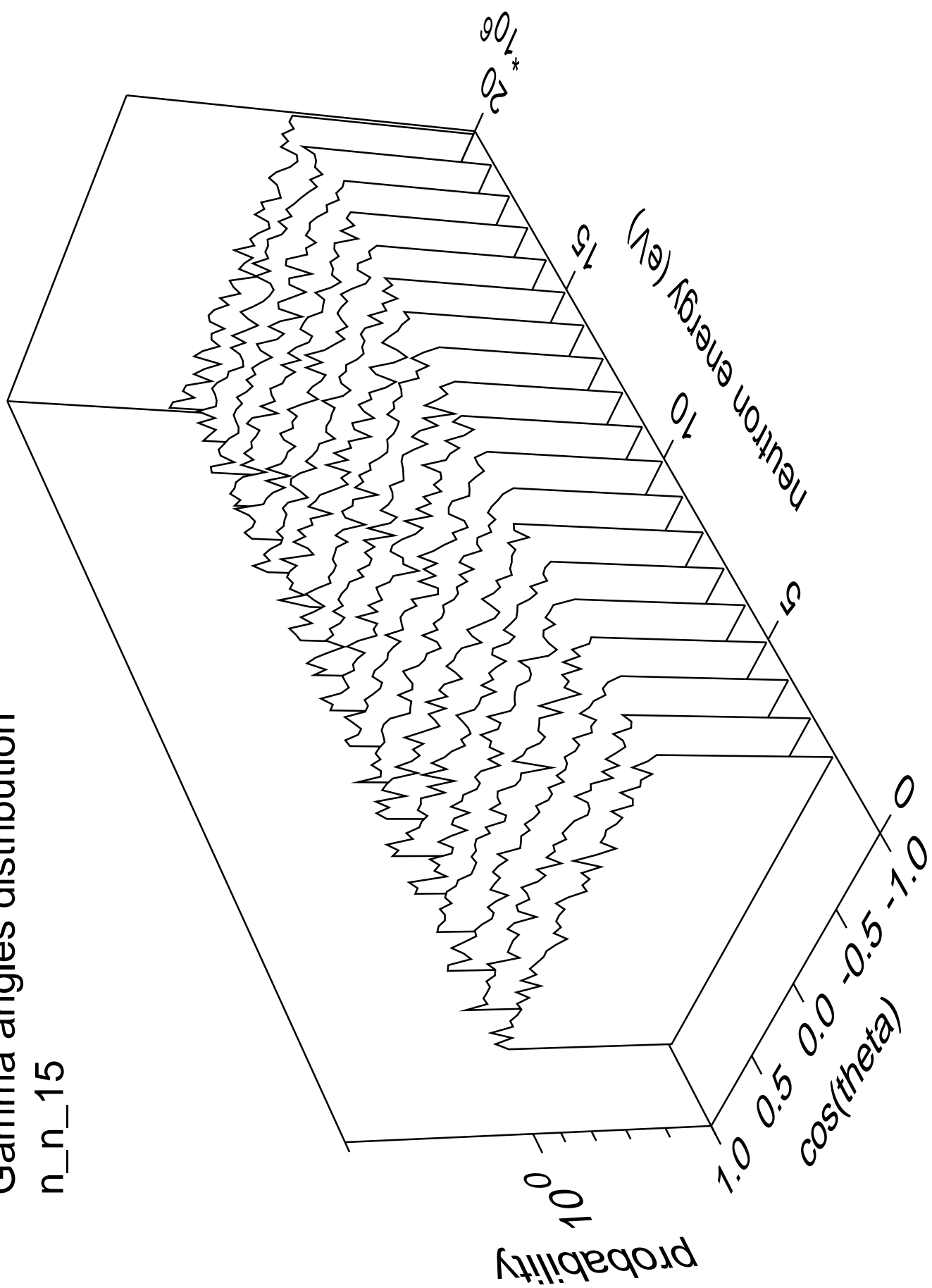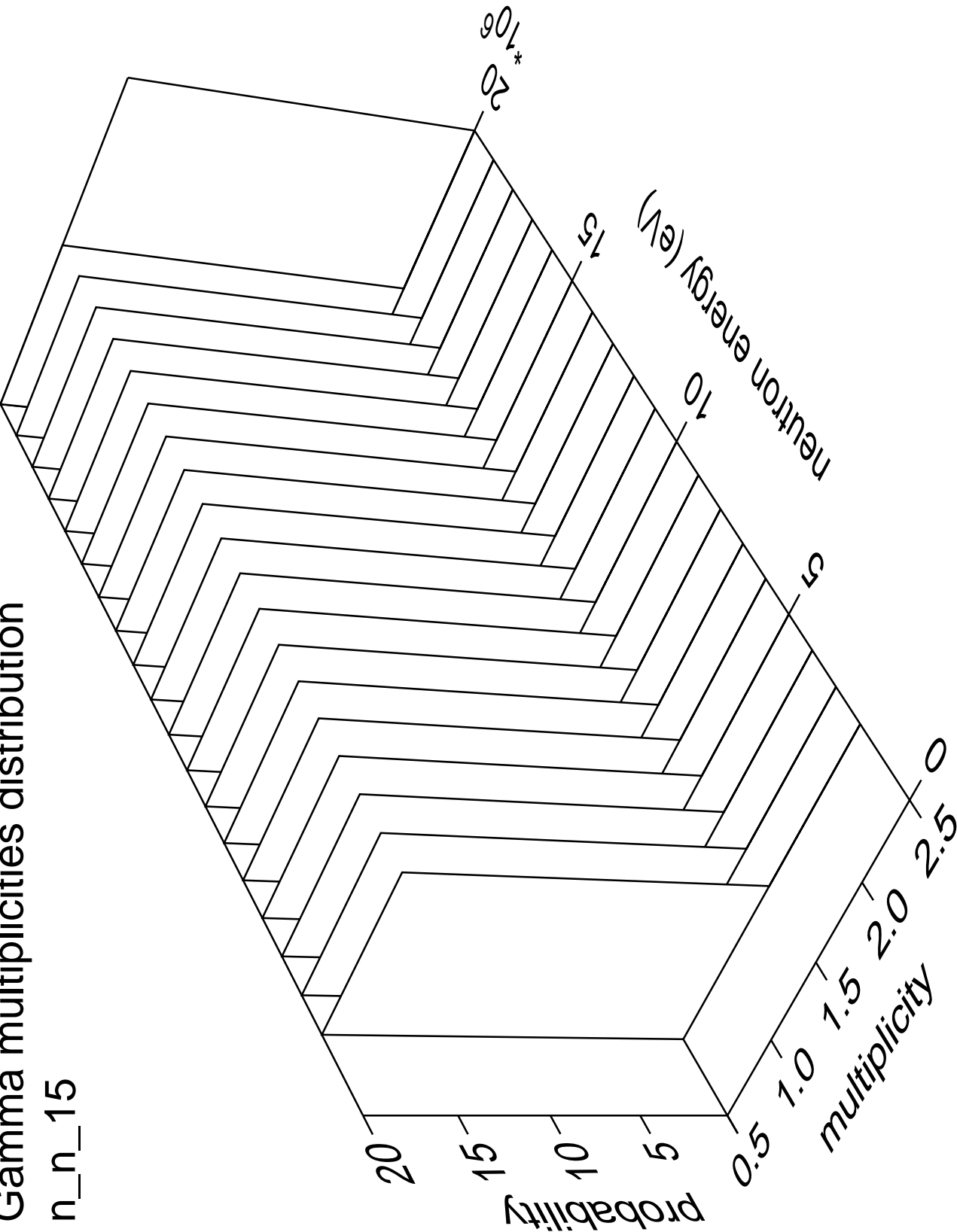
gamma energy (MeV)

Gamma angles distribution
n_n_14

Gamma multiplicities distribution
n_n_14

Gamma energy distribution
n_n_15

probability

100 80 60 40 20

gamma energy (MeV)

0 5 10 15 20

neutron energy (eV)

5 10 15 20 *10⁶

Gamma angles distribution
n_n_15

probability

10^0

neutron energy (eV)

20 $*10^6$

15

10

5

0

1.0 0.5 0.0 -0.5 -1.0

cos(theta)
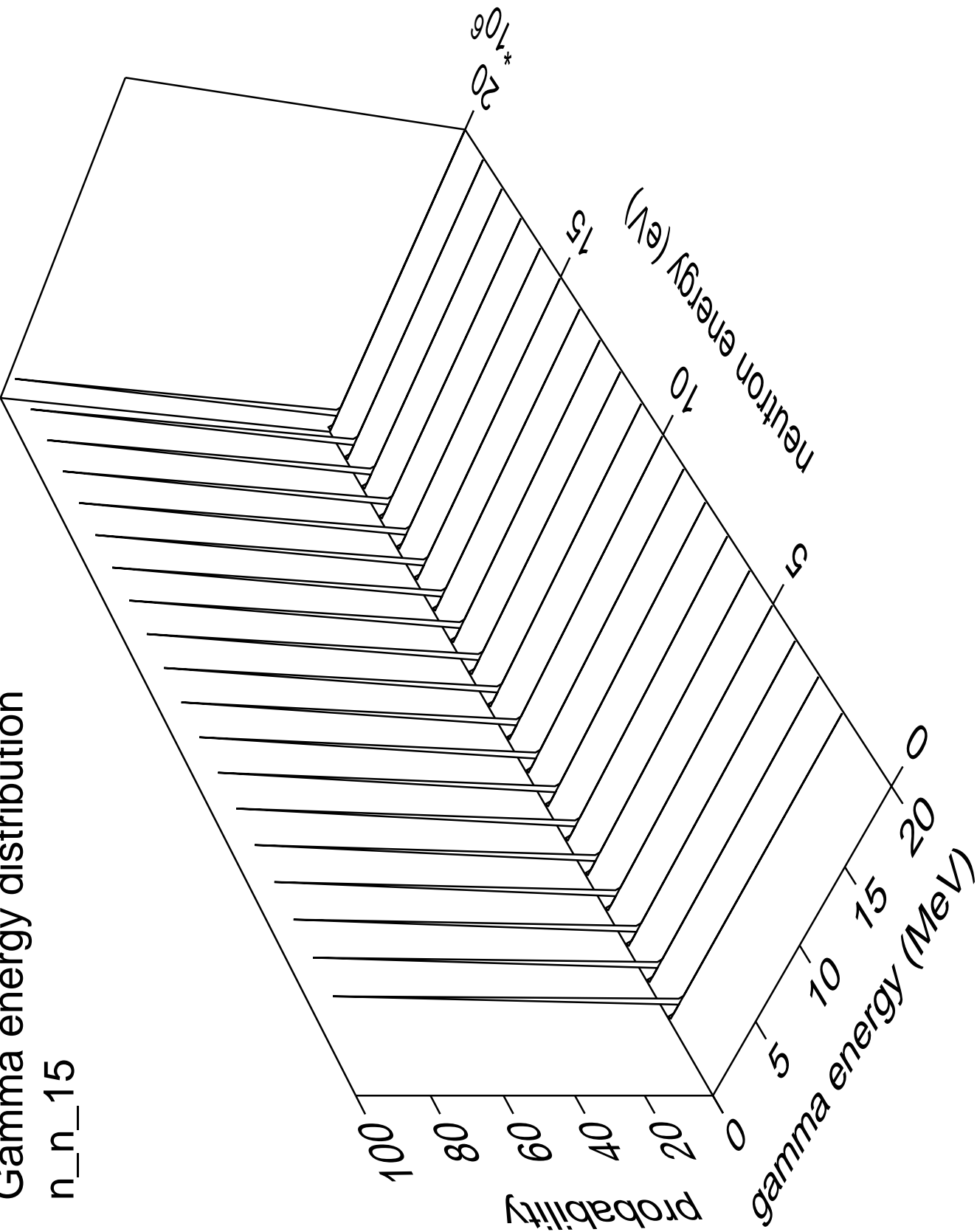
Gamma multiplicities distribution
n_n_15

Gamma energy distribution
n_n_16

probability

neutron energy (eV)

gamma energy (MeV)

100

50

0

20

15

10

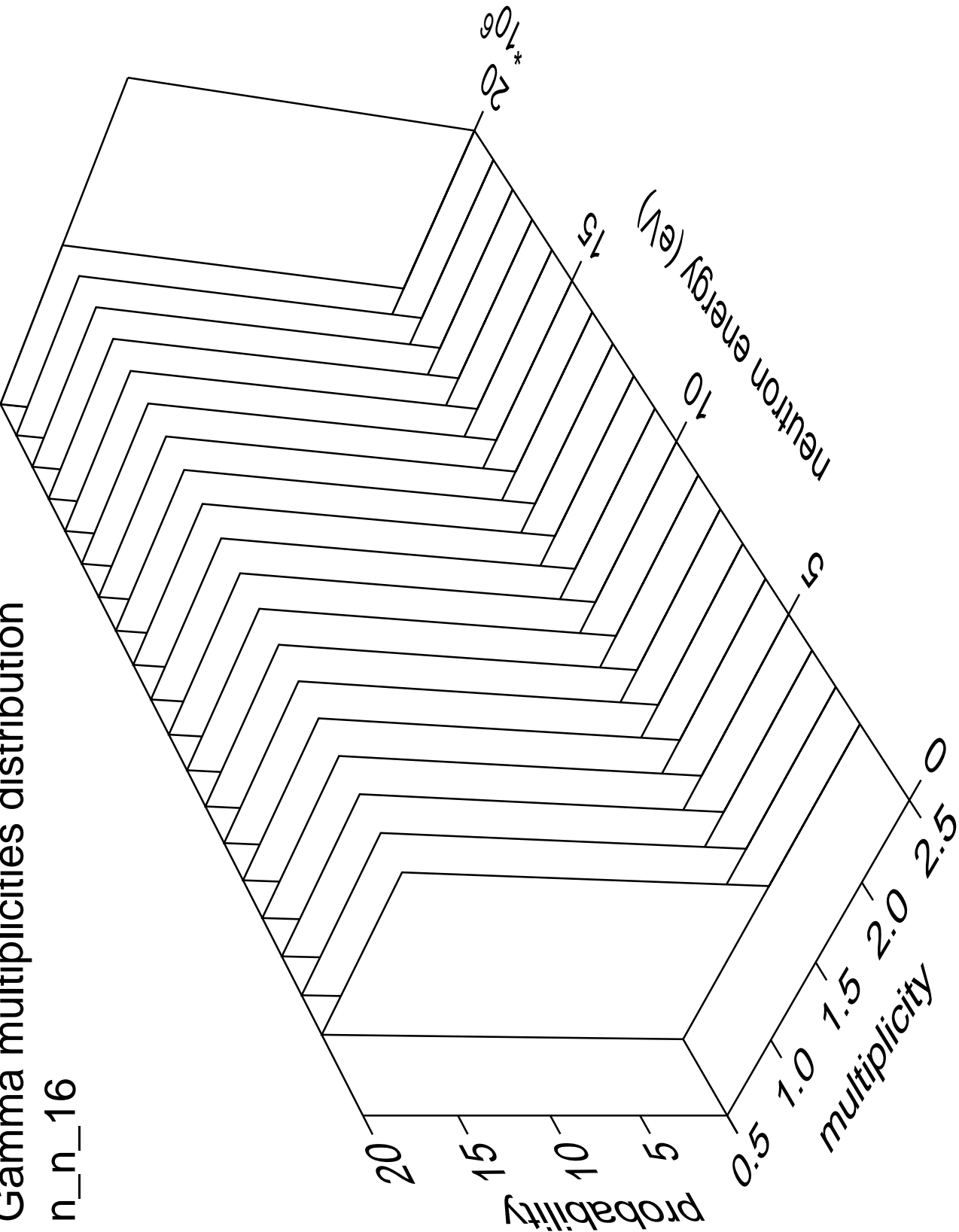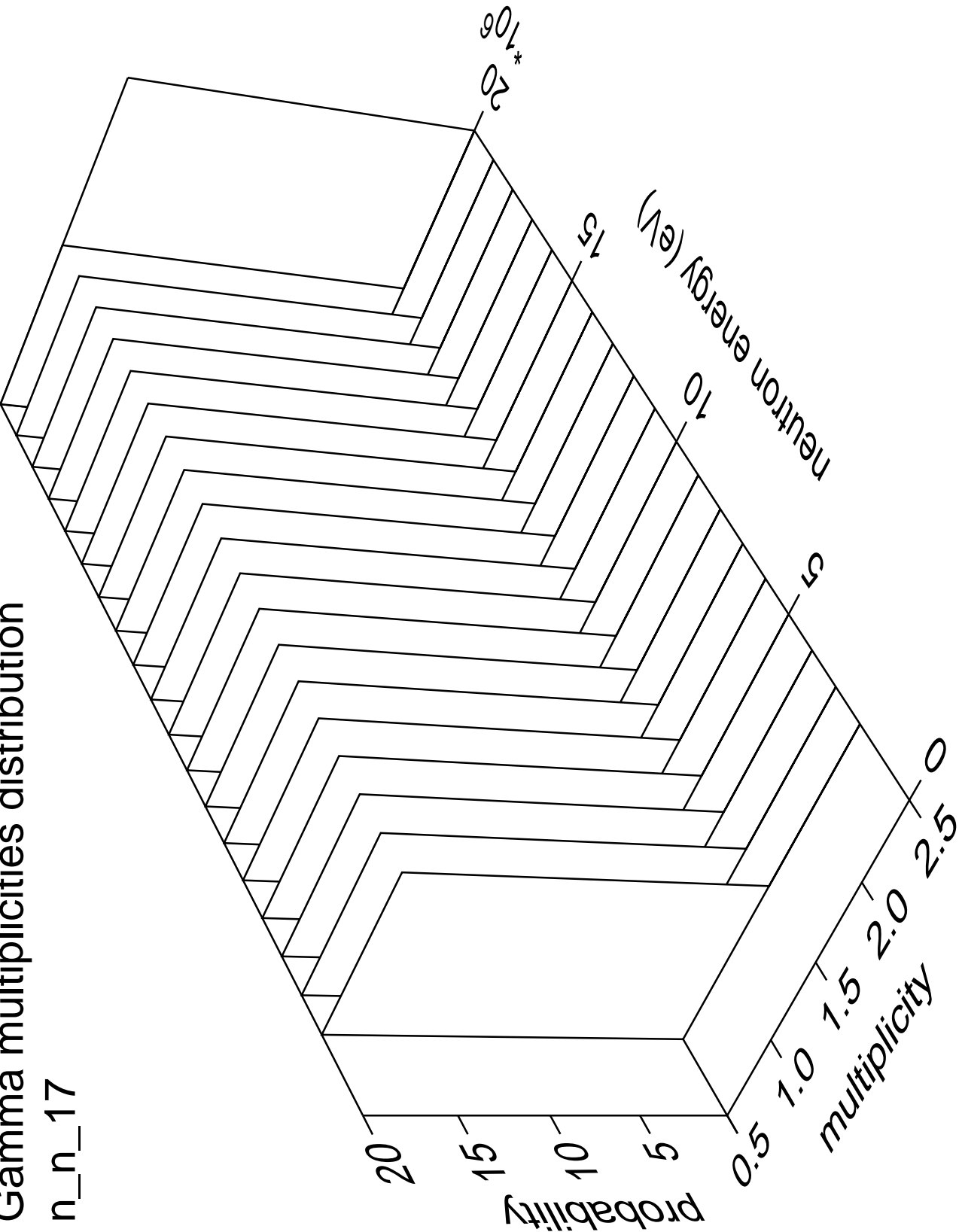5

20

15

10

5

0

20 *10⁶
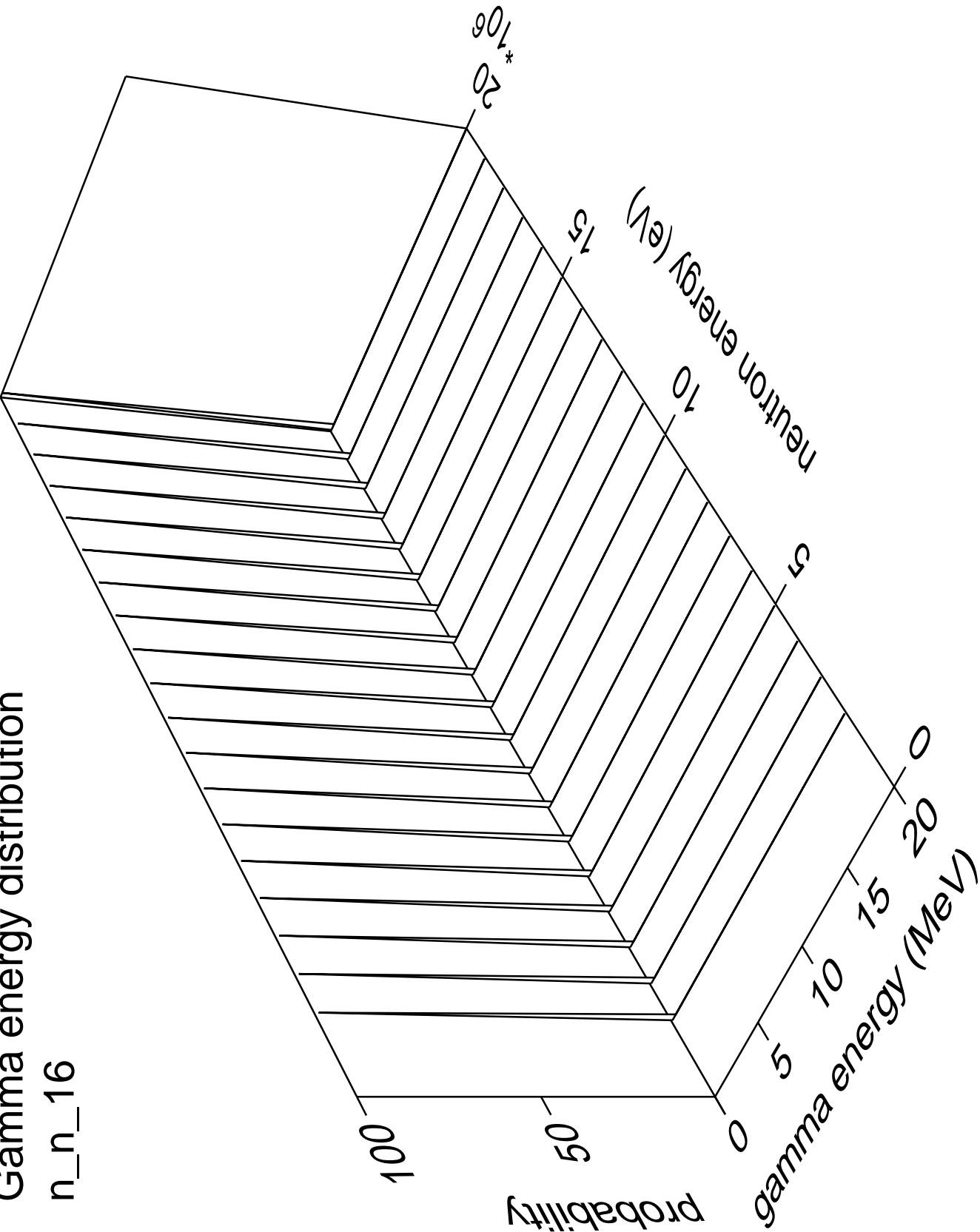
Gamma angles distribution
n_n_16
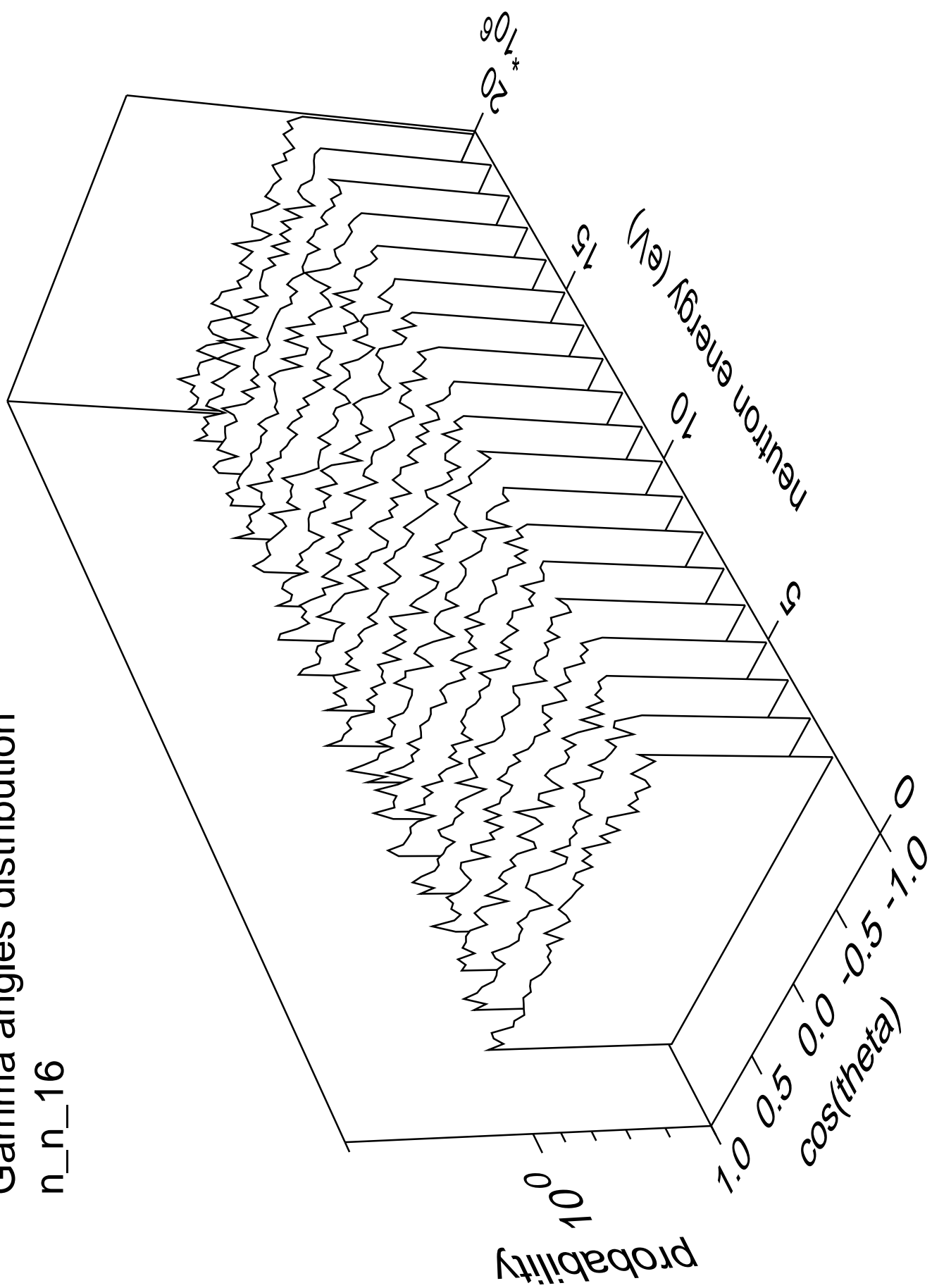
Gamma multiplicities distribution
n_n_16

Gamma energy distribution
n_n_17
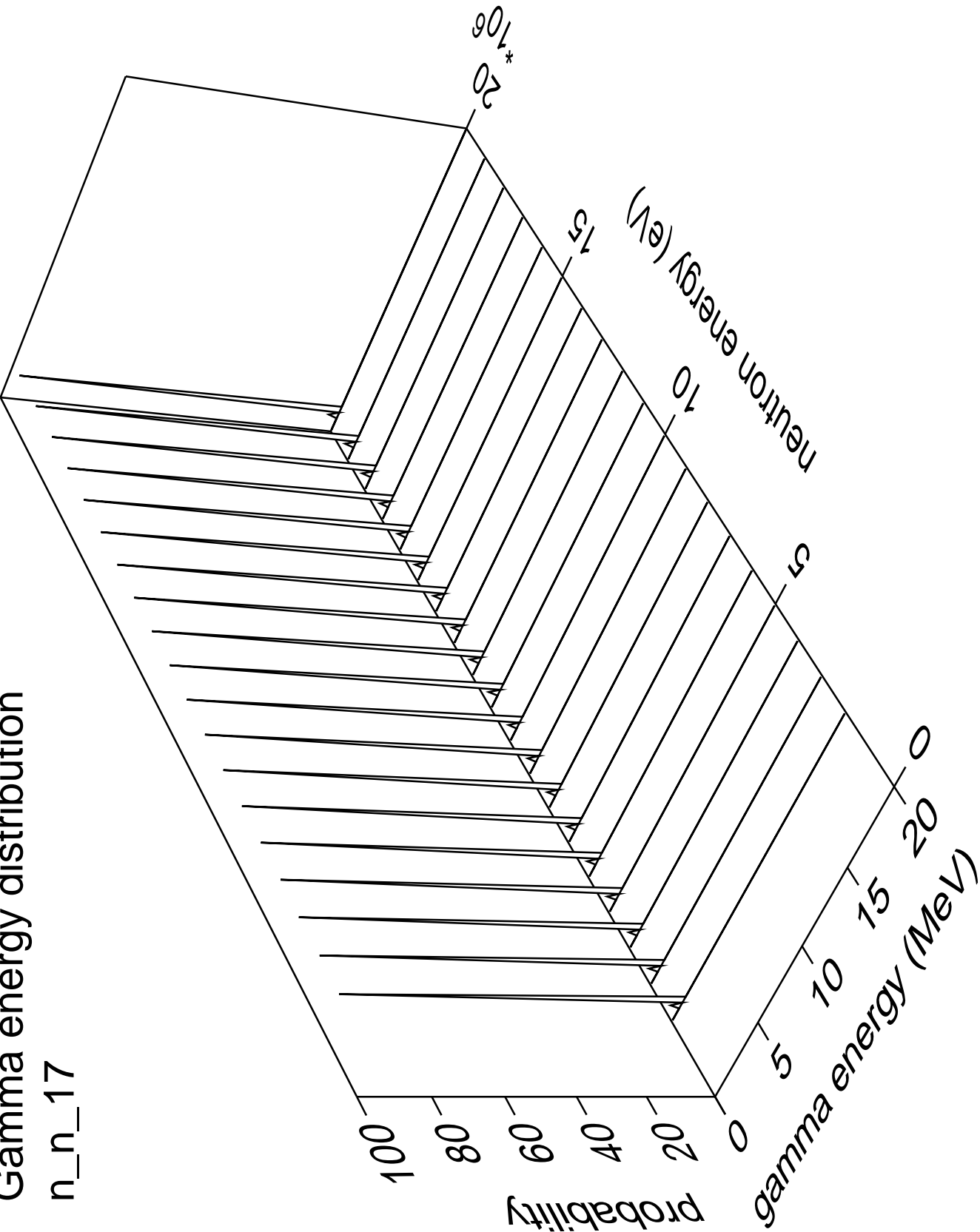
probability

neutron energy (eV)

gamma energy (MeV)

*10⁶

Gamma angles distribution
n_n_17

probability

cos(theta)

neutron energy (eV)

Gamma multiplicities distribution
n_n_17

probability

multiplicity

neutron energy (eV)

20 *10⁶

15

10

5

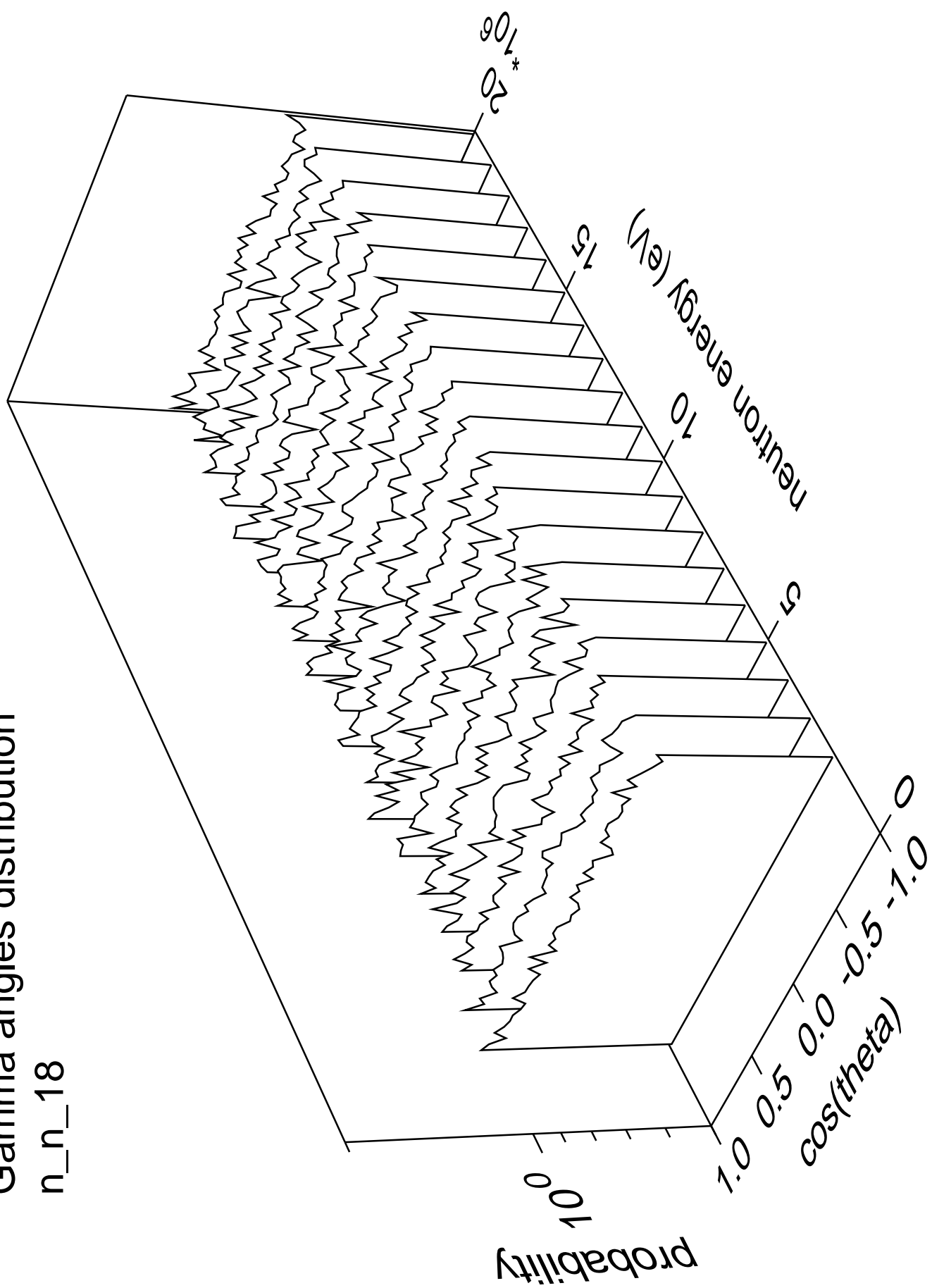0.5 1.0 1.5 2.0 2.5 0
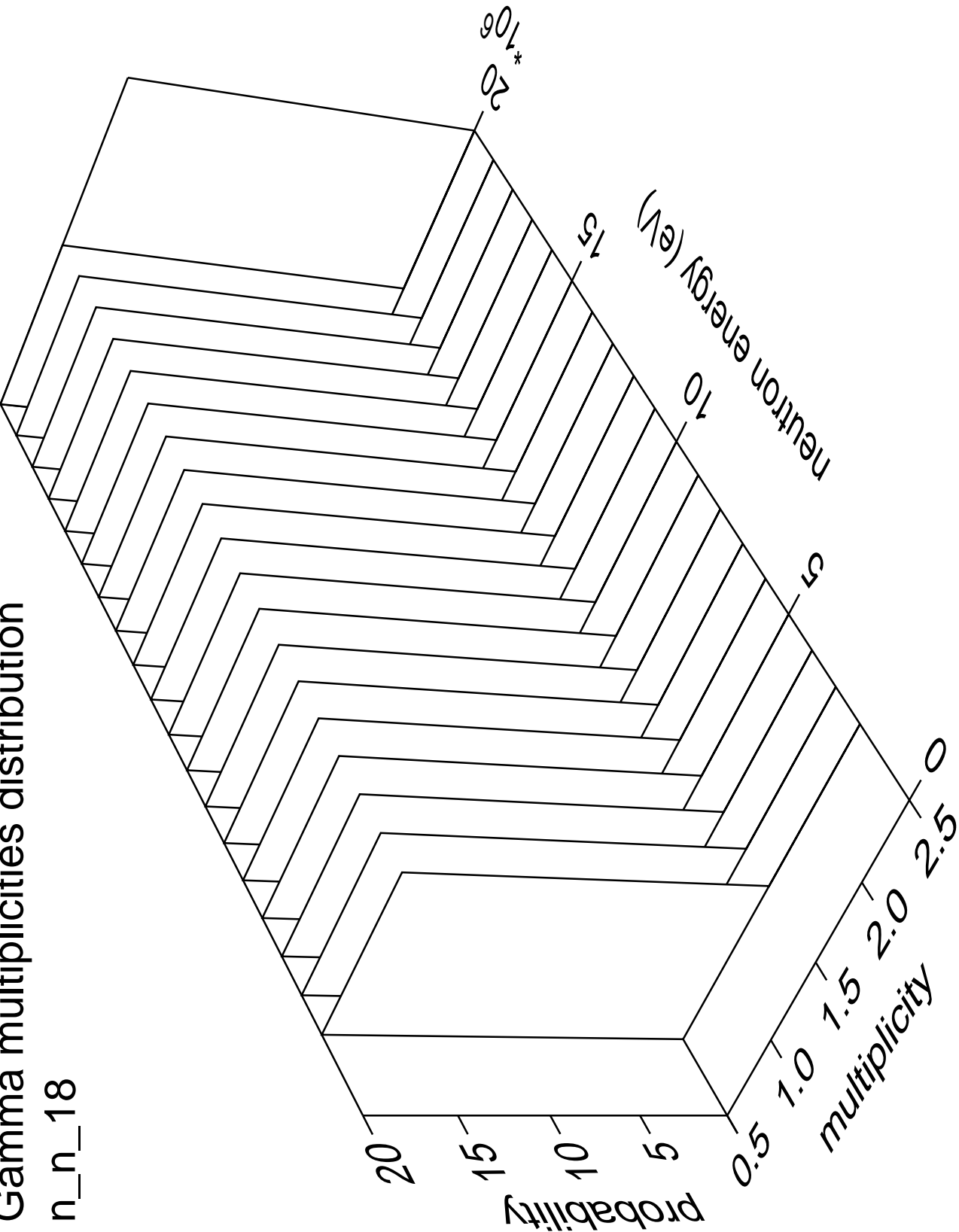
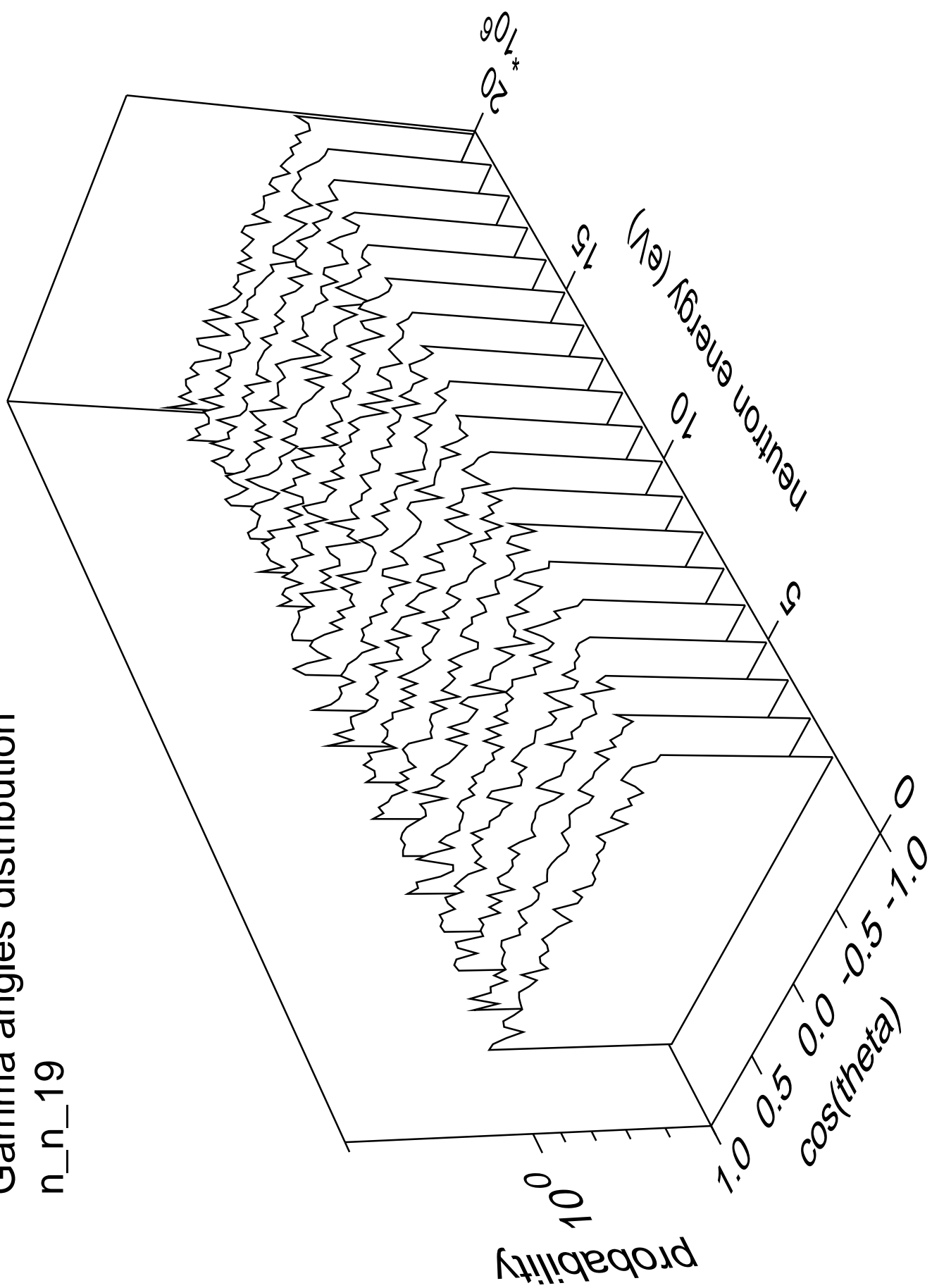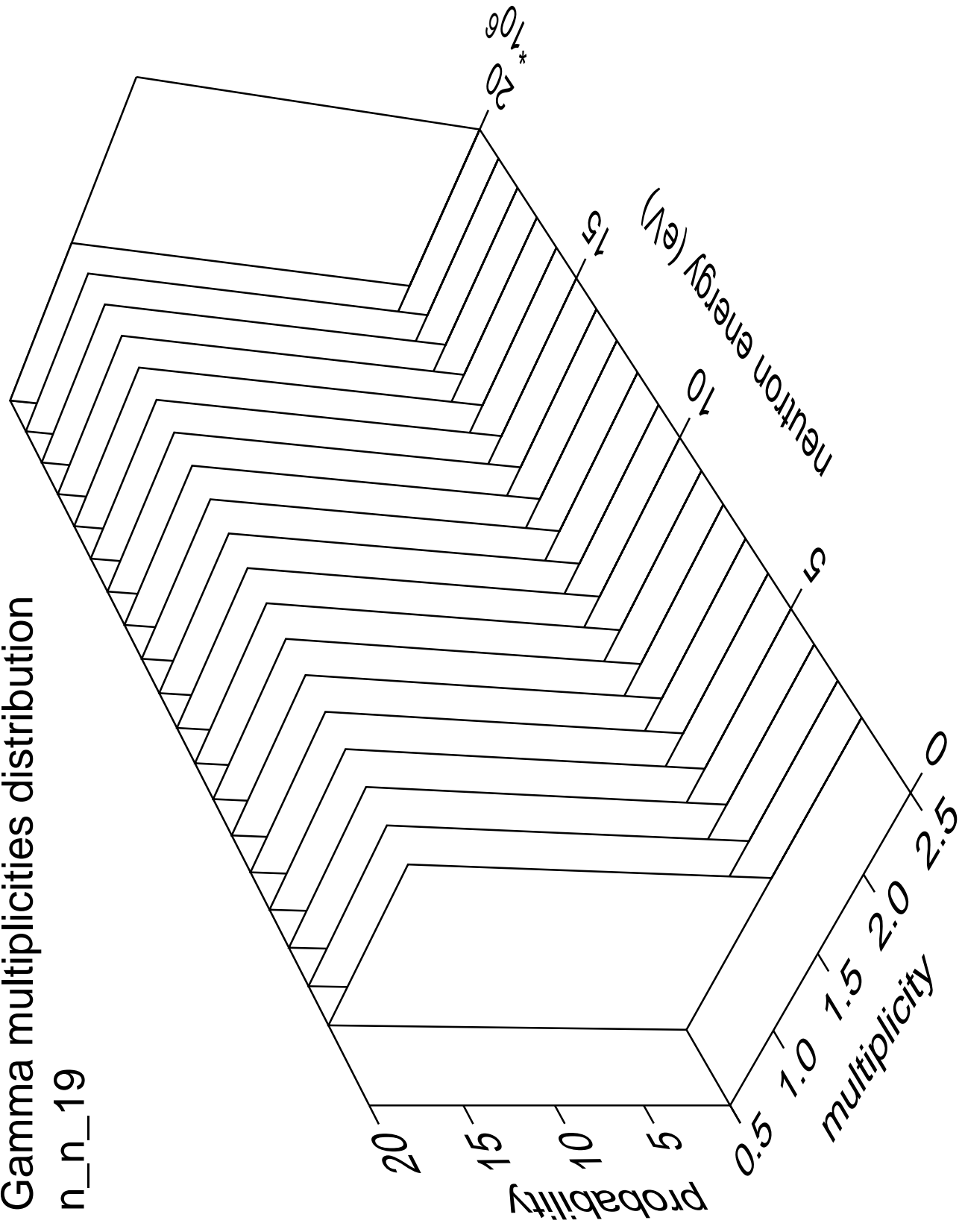20 15 10 5
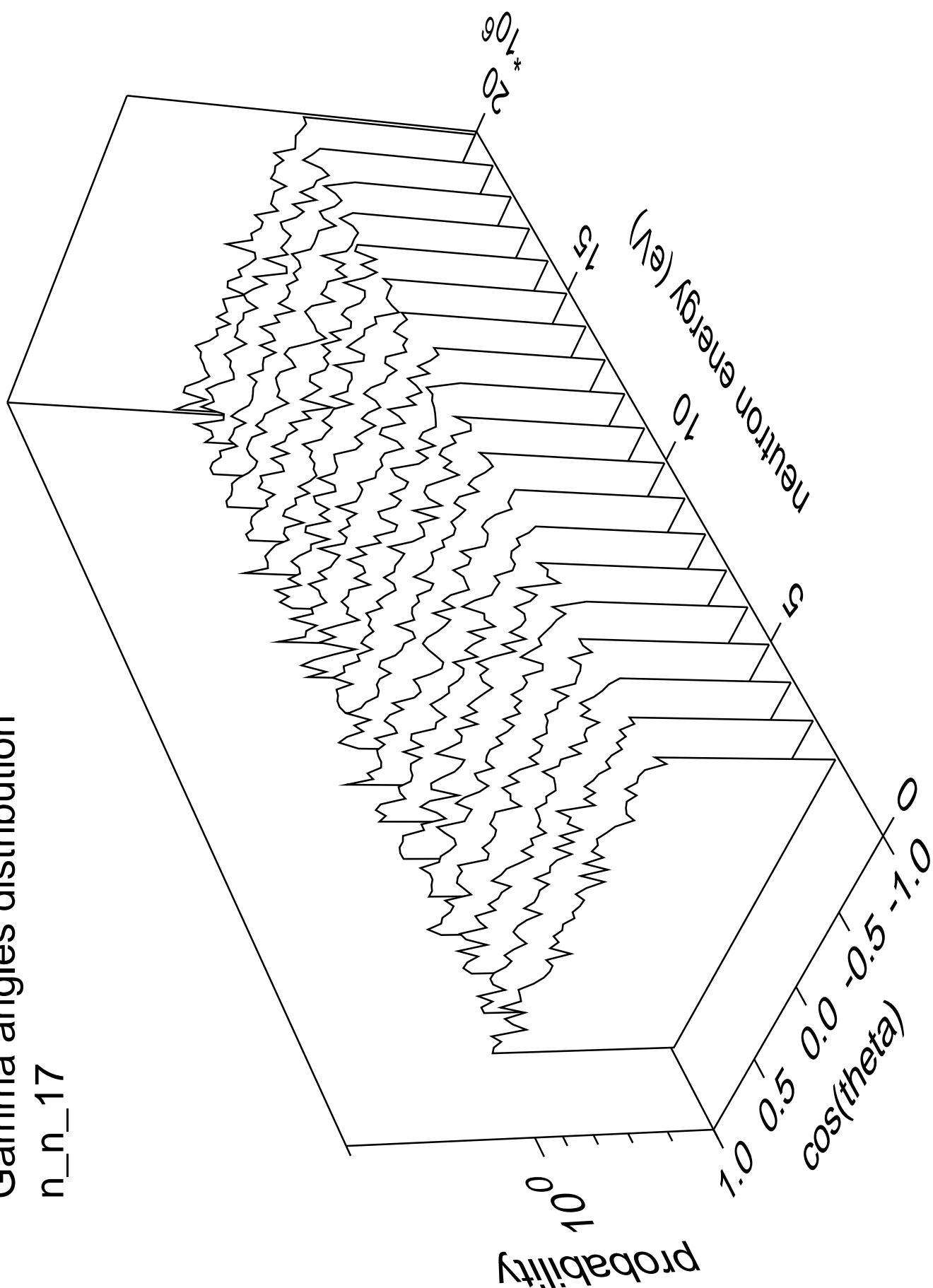
Gamma energy distribution
n_n_18
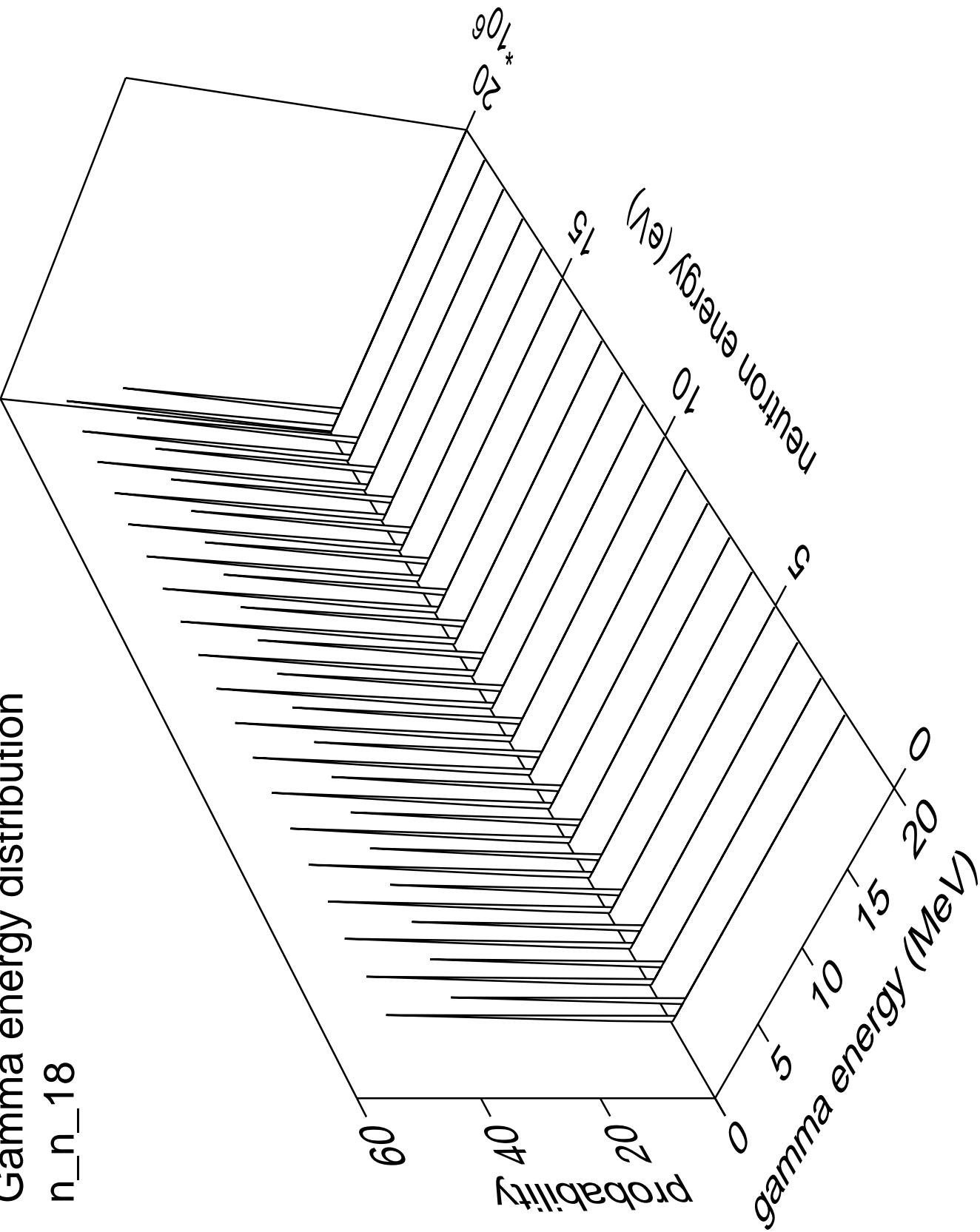
Gamma angles distribution
n_n_18

Gamma multiplicities distribution
n_n_18

Gamma energy distribution
n_n_19

probability

gamma energy (MeV)

neutron energy (eV)

20 *10⁶

15

10

5

80

60

40

20

0

5   10   15   20

0

Gamma angles distribution
n_n_19

probability

neutron energy (eV)

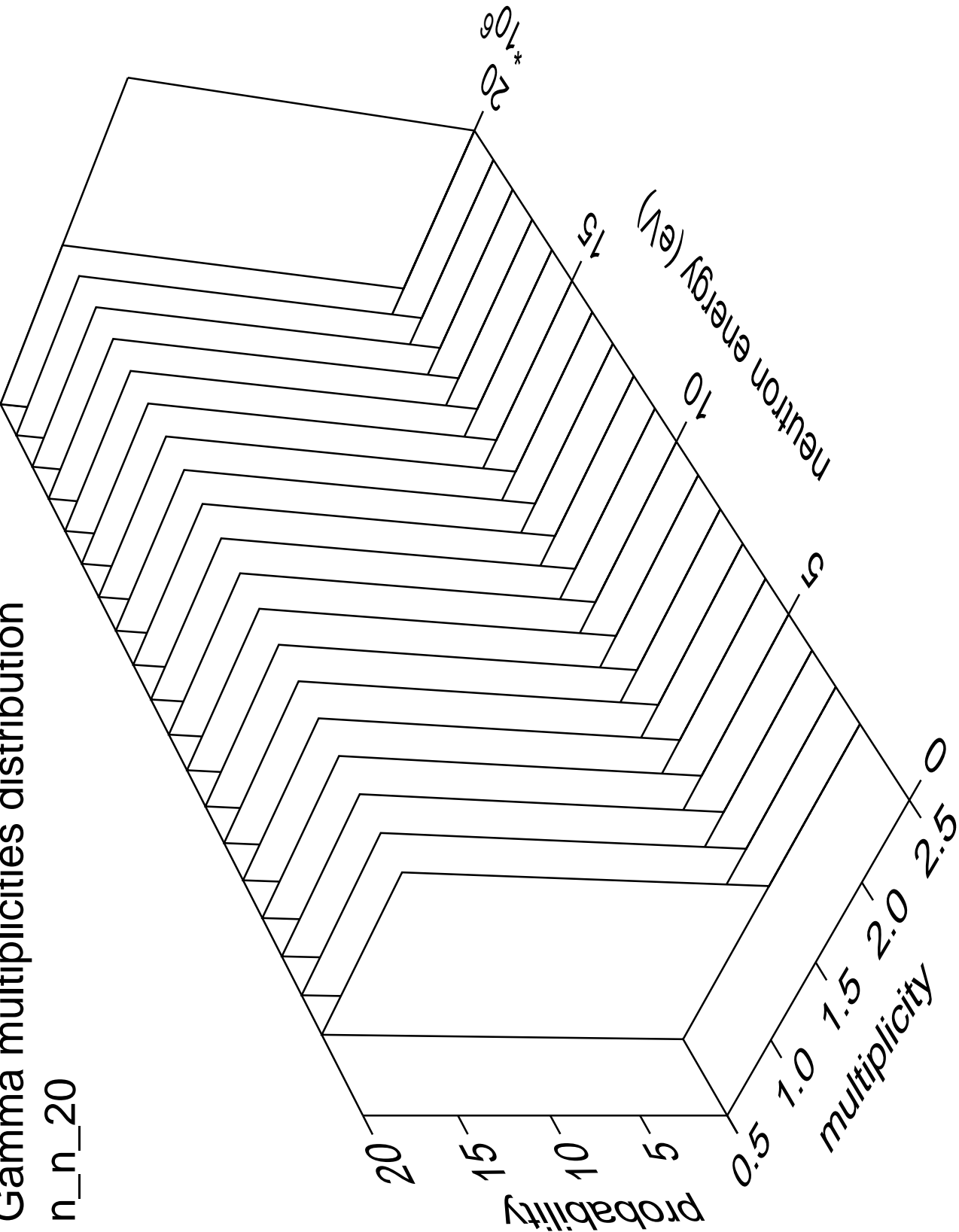cos(theta)

20 *10⁶

15

10

5

0

1.0 0.5 0.0 -0.5 -1.0

10⁰
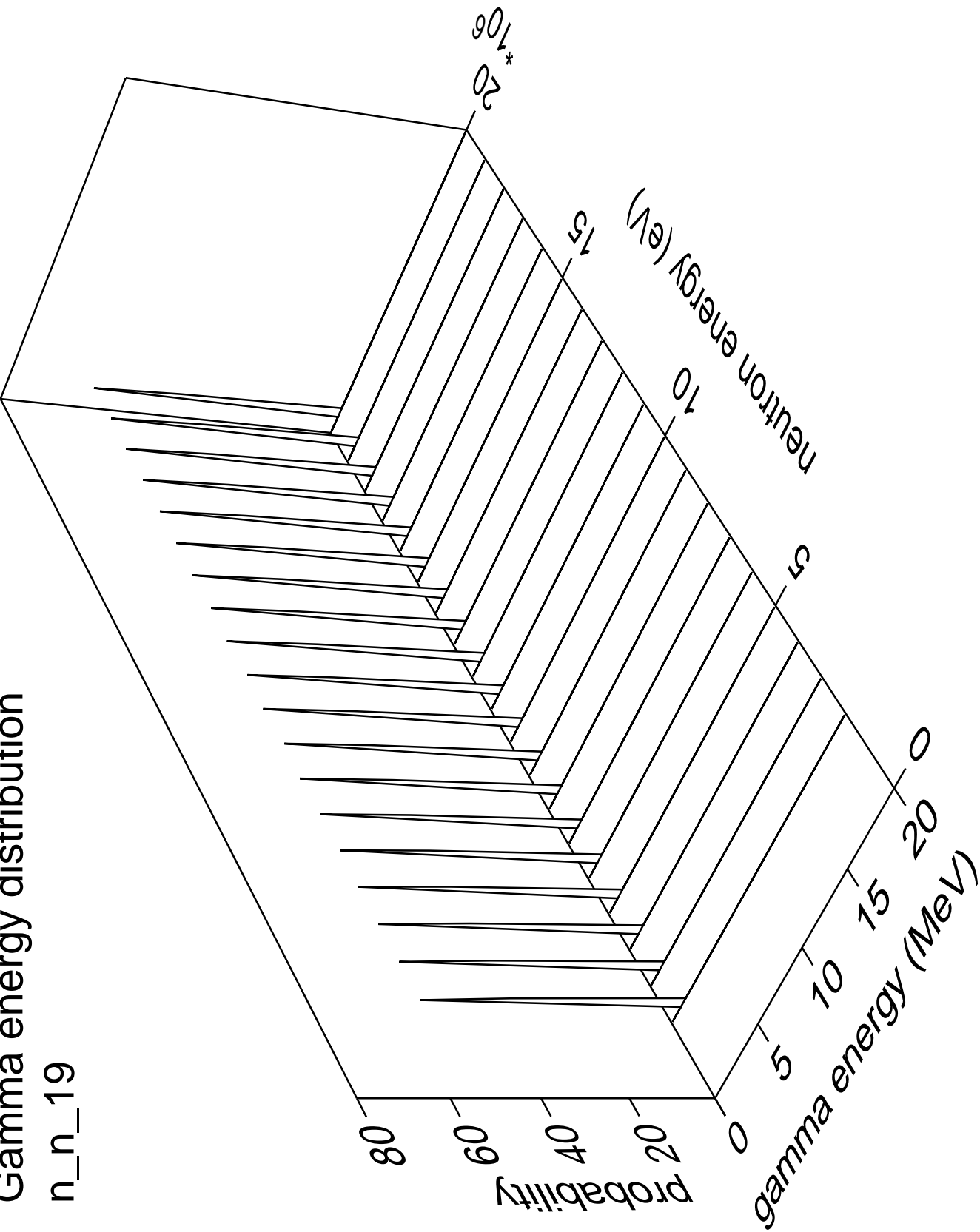
Gamma multiplicities distribution
n_n_19

Gamma energy distribution
n_n_20

probability

neutron energy (eV)

gamma energy (MeV)

20
15
10
5
0

0   5   10   15   20

20   40   60   80

20 *10⁶

5   10   15   20

Gamma angles distribution
n_n_20

probability

neutron energy (eV)

*10⁶

20

15

10

5

0

cos(theta)

1.0 0.5 0.0 -0.5 -1.0
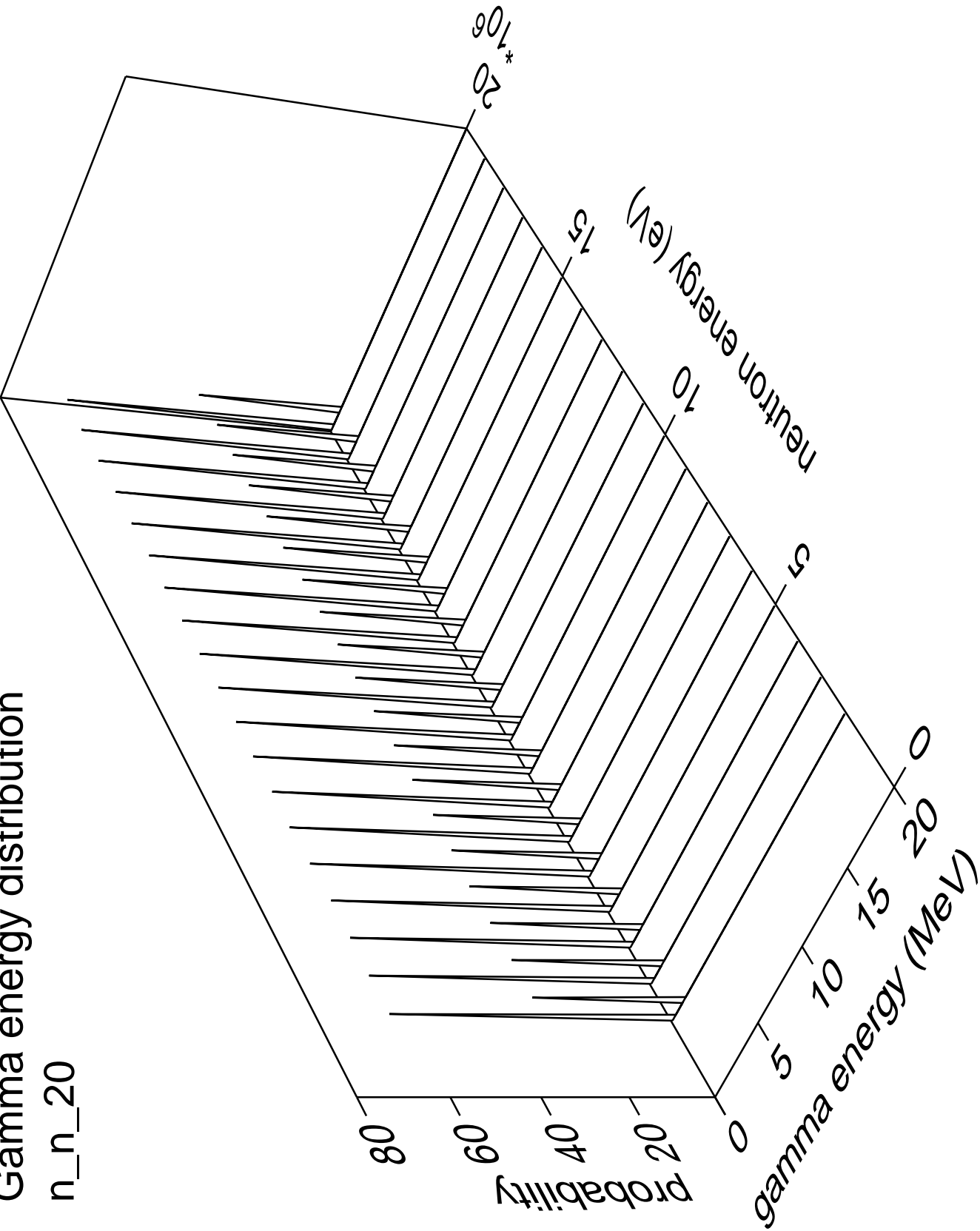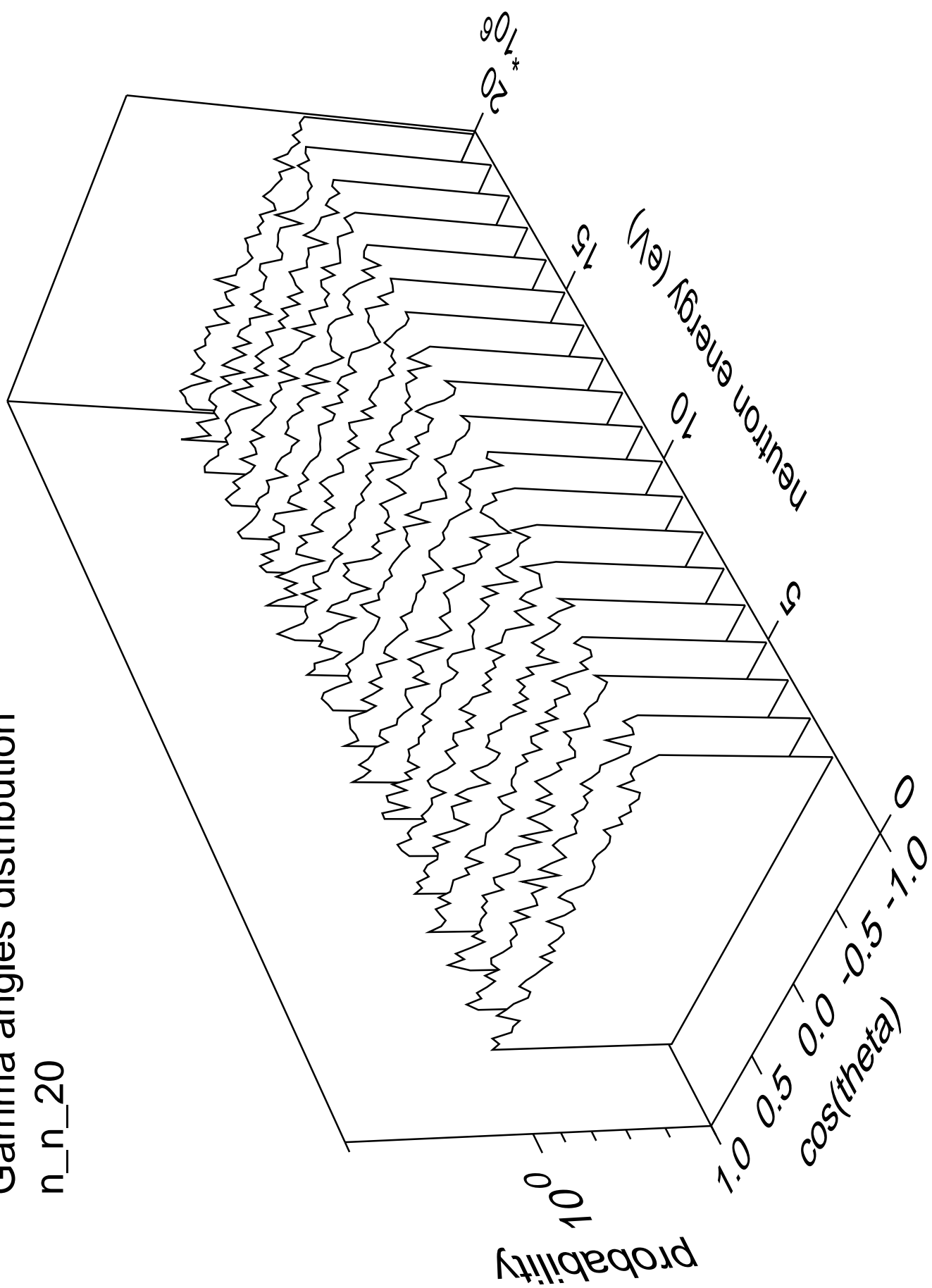
Gamma multiplicities distribution
n_n_20

Gamma energy distribution
n_n_21

probability

neutron energy (eV)

gamma energy (MeV)

20 *10⁶

Gamma angles distribution
n_n_21

neutron energy (eV)

cos(theta)

probability
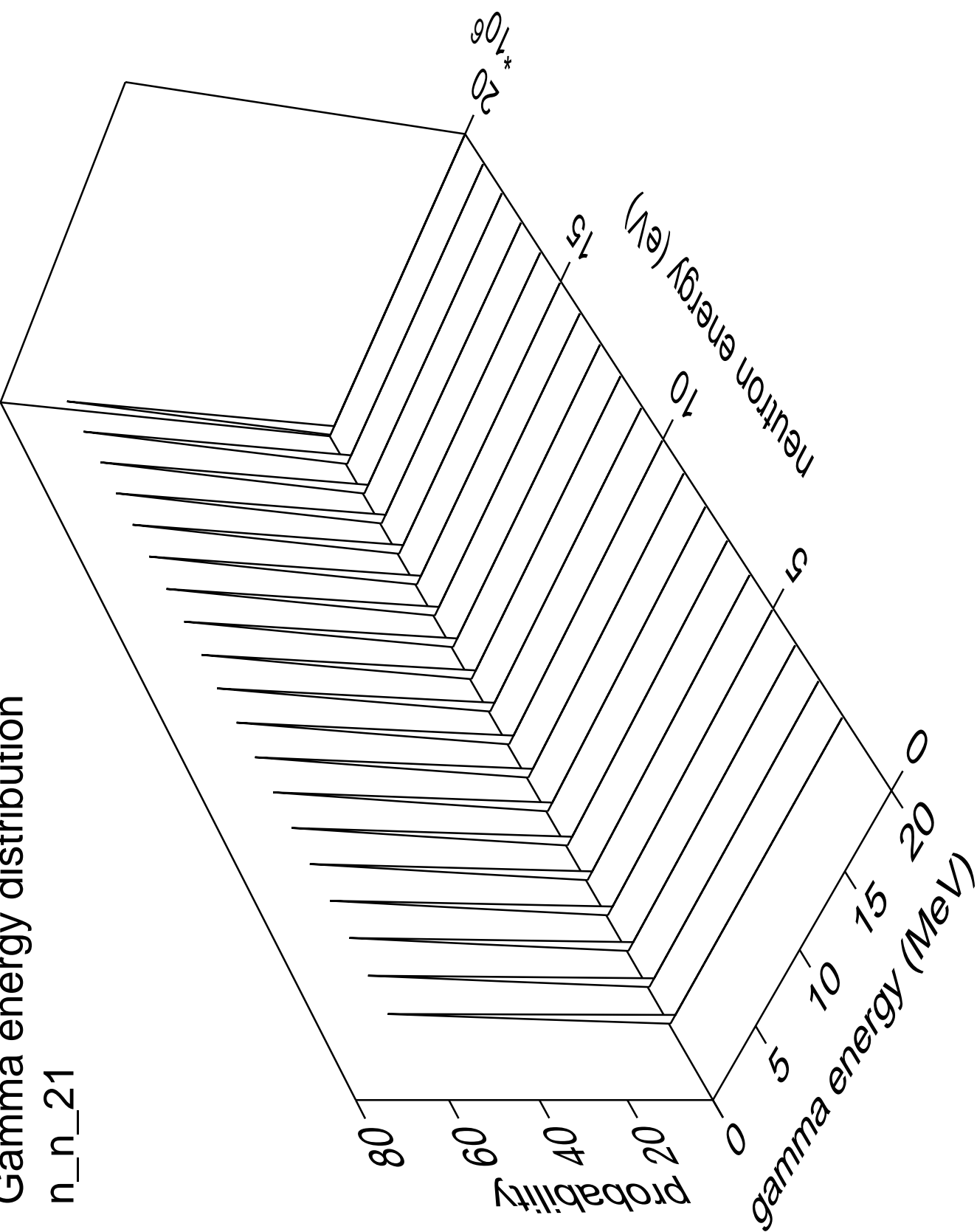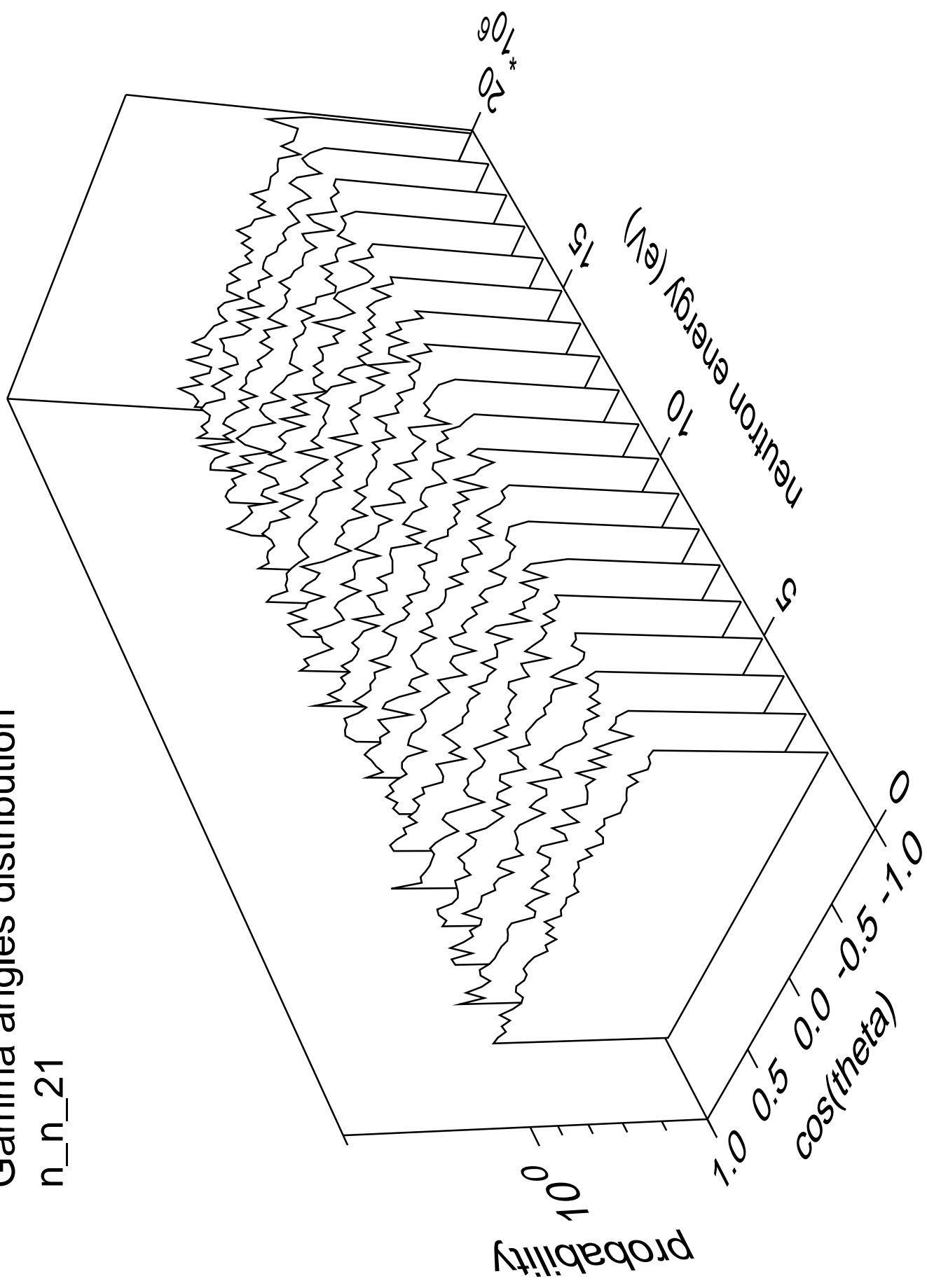
Gamma multiplicities distribution
n_n_21

Gamma energy distribution
n_n_cont

probability

neutron energy (eV)

gamma energy (MeV)

20 *10⁶

15

10

5

0

20

15

10

5

0

30

20

10

Gamma angles distribution
n_n_cont

neutron energy (eV)

cos(theta)

probability
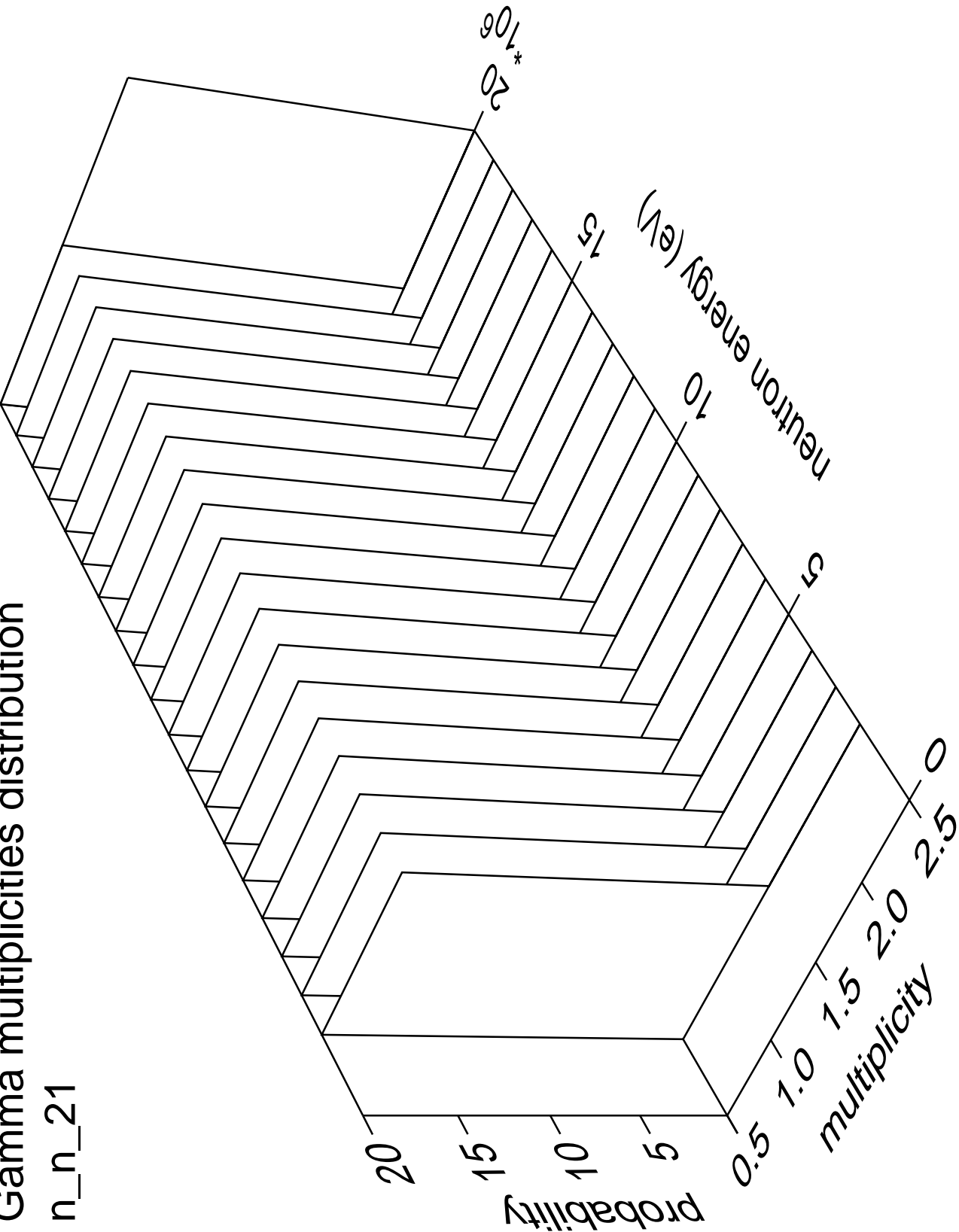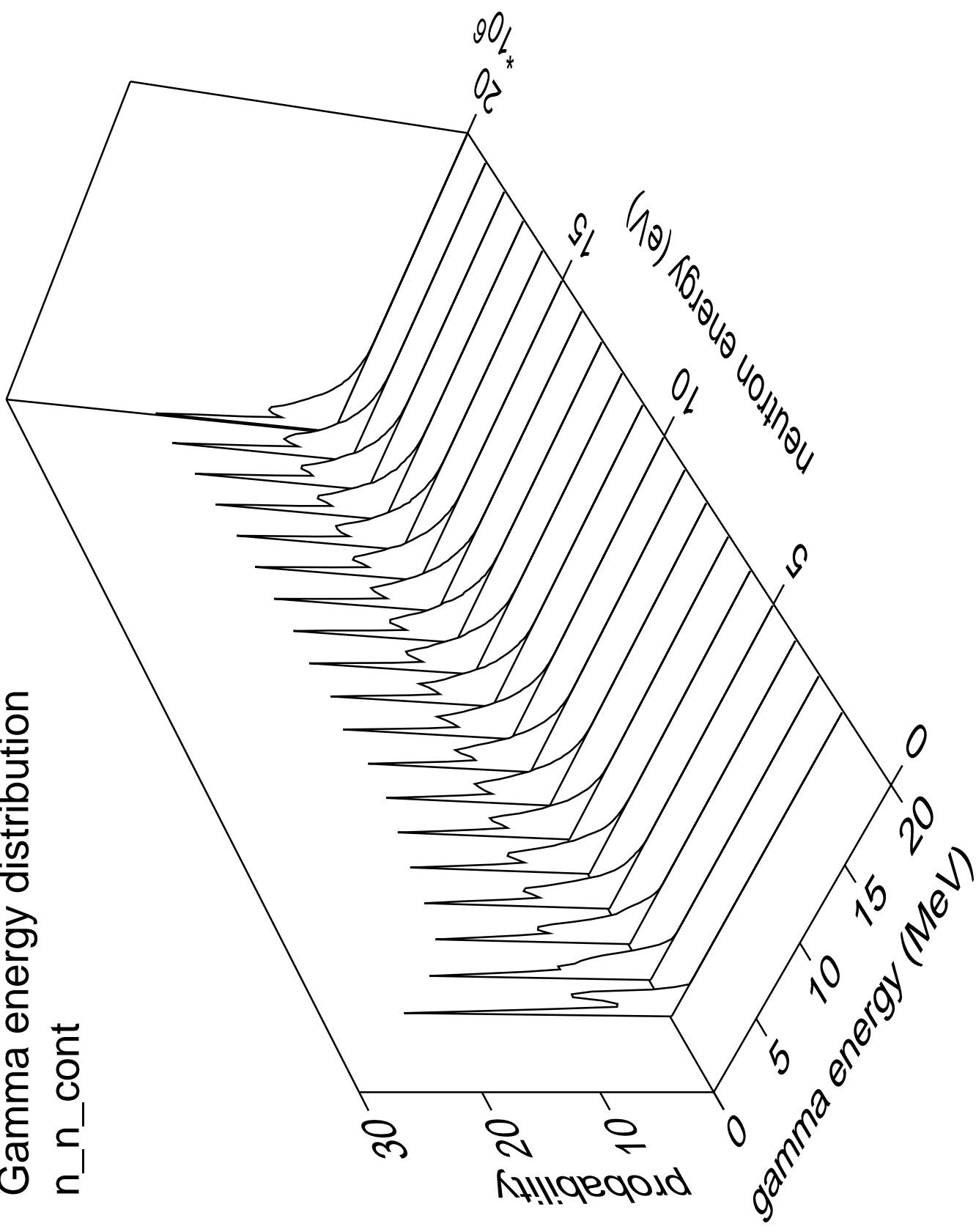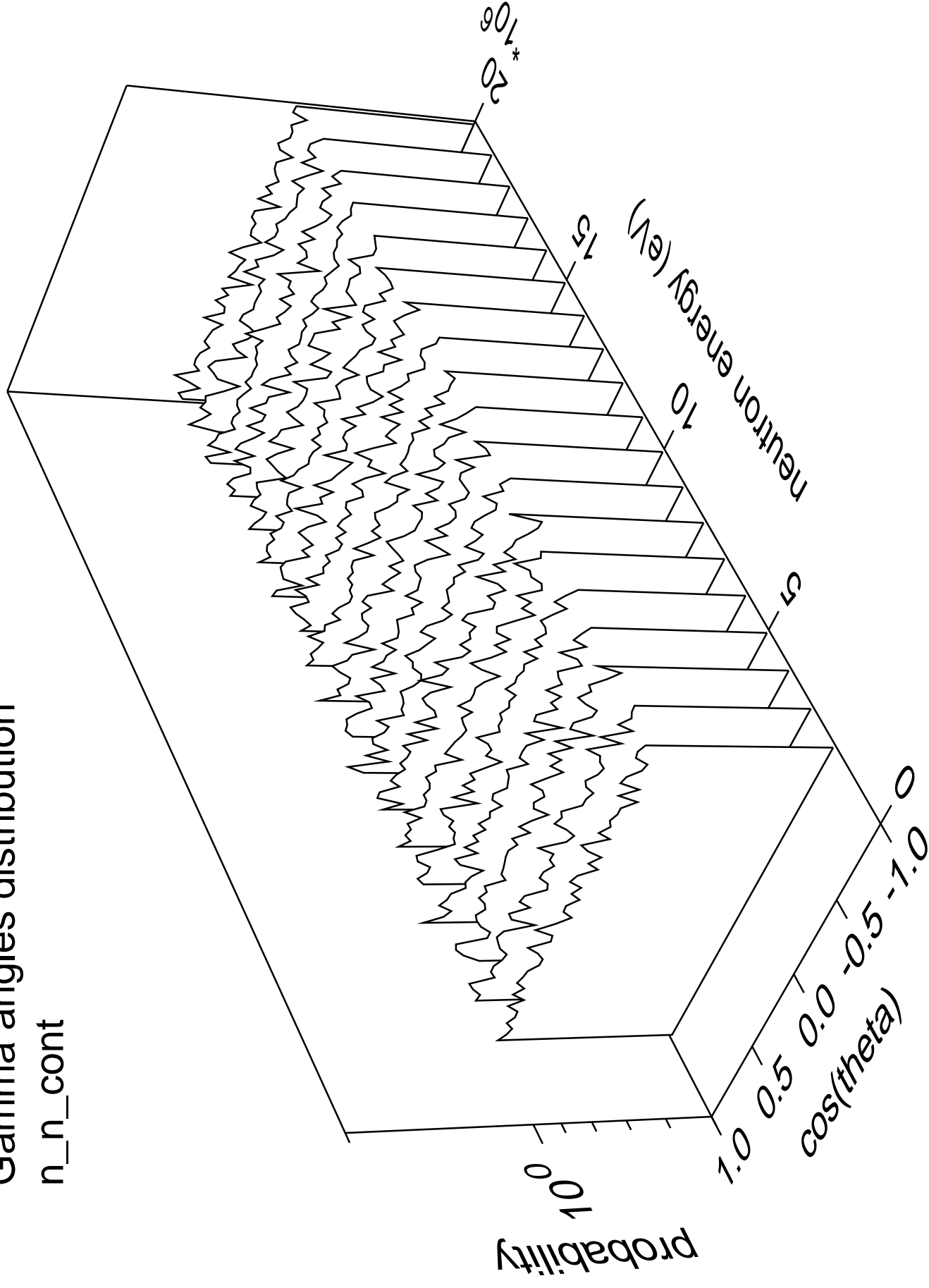
Gamma multiplicities distribution
n_n_cont

Gamma energy distribution
n_p_tot
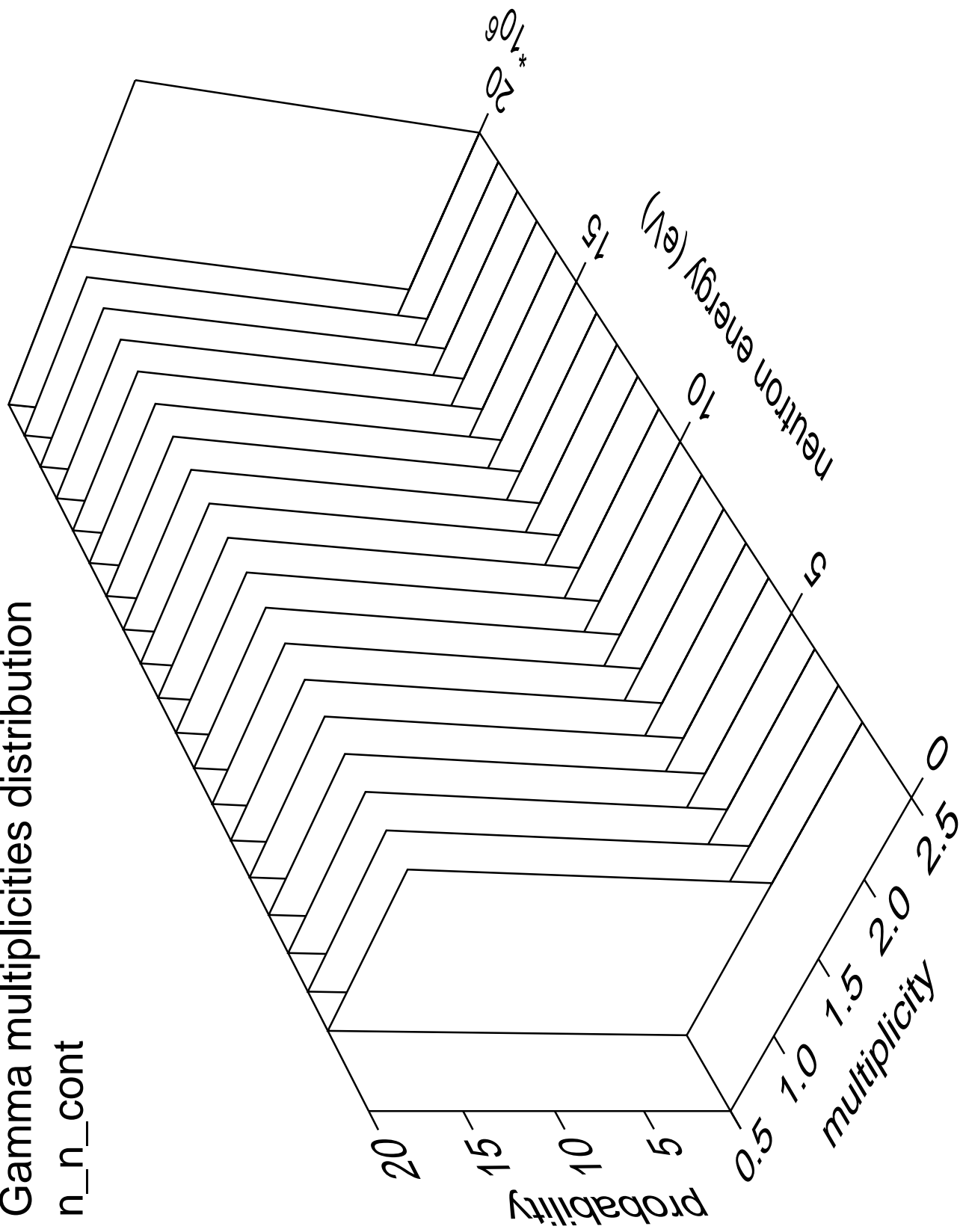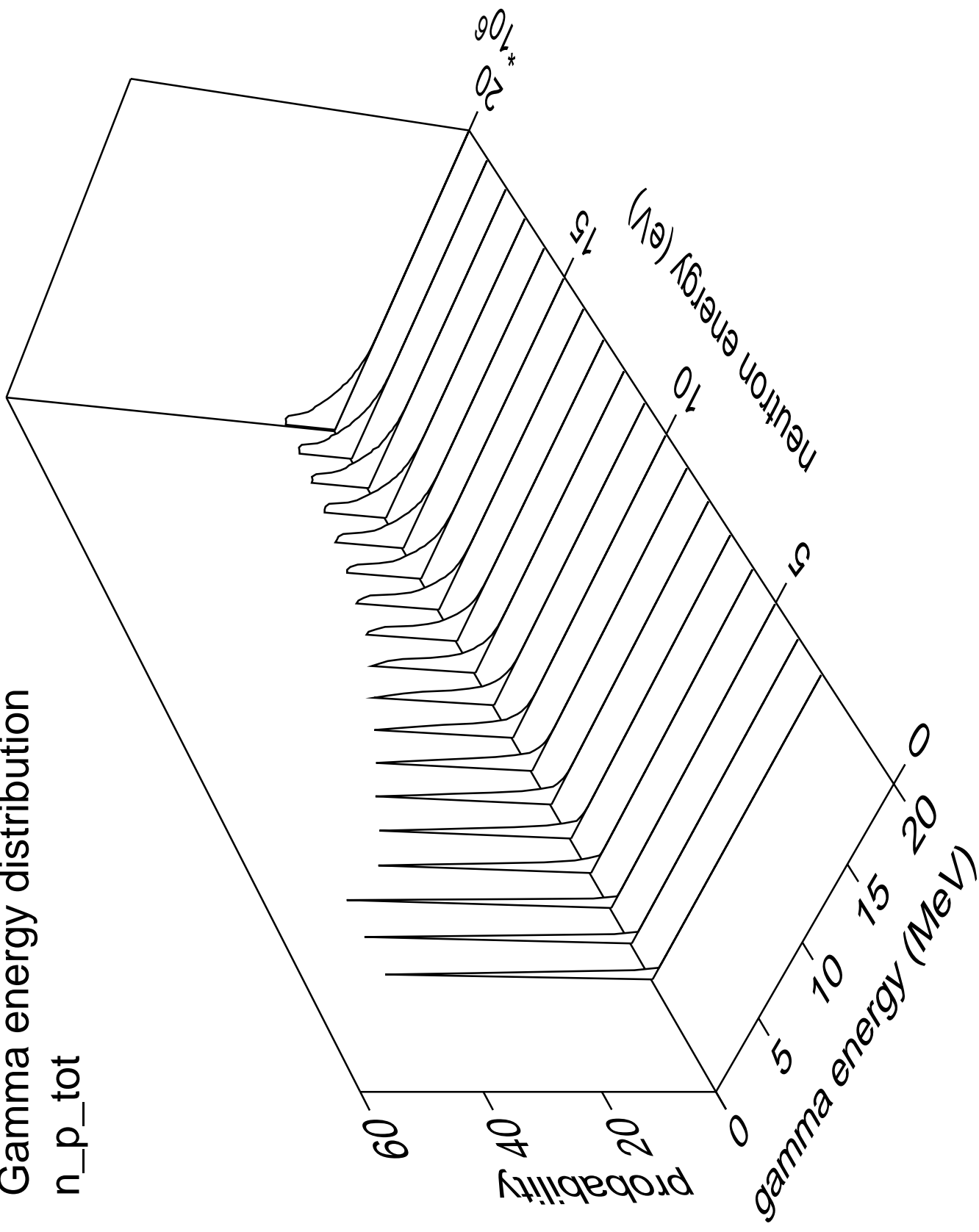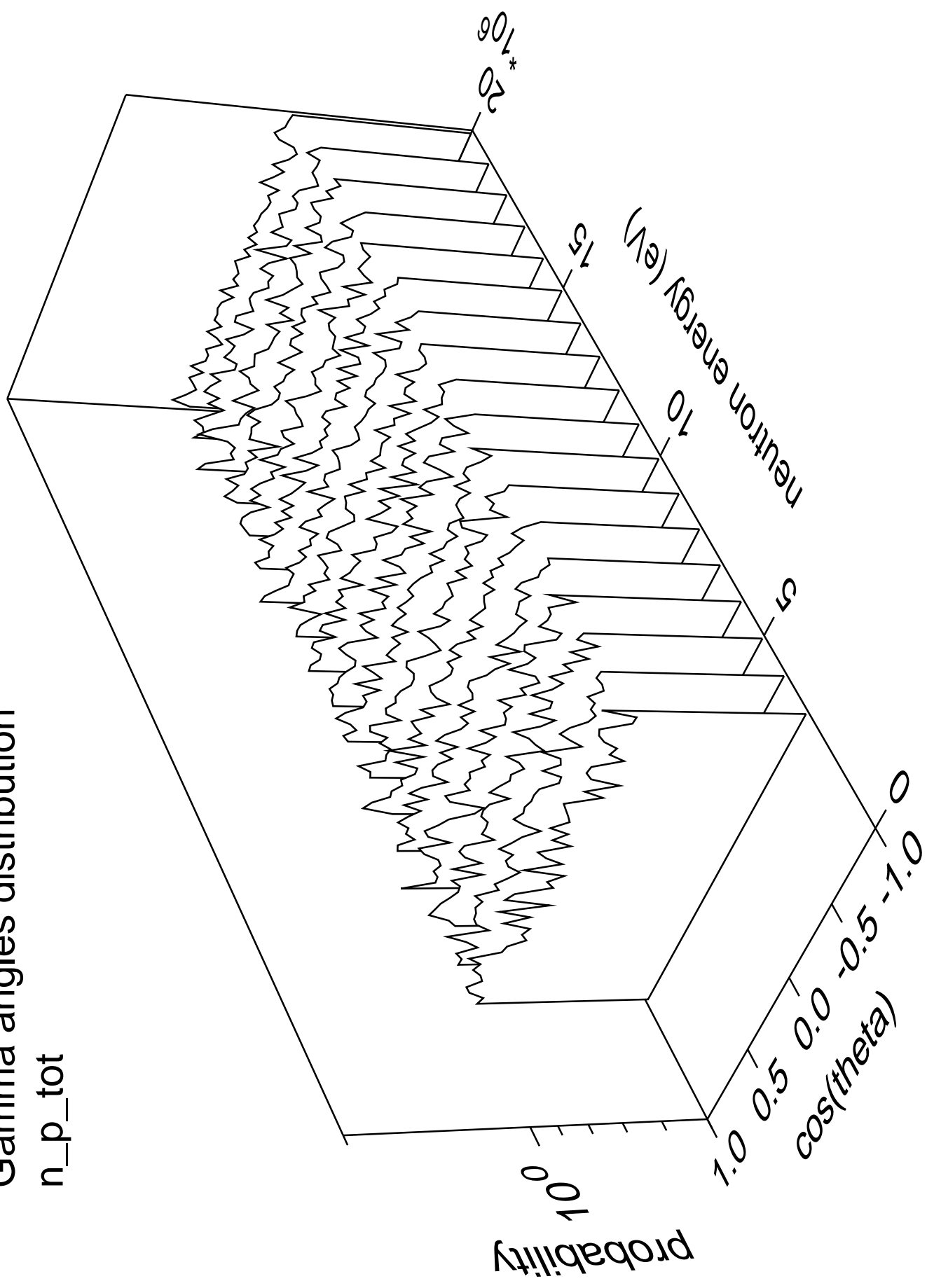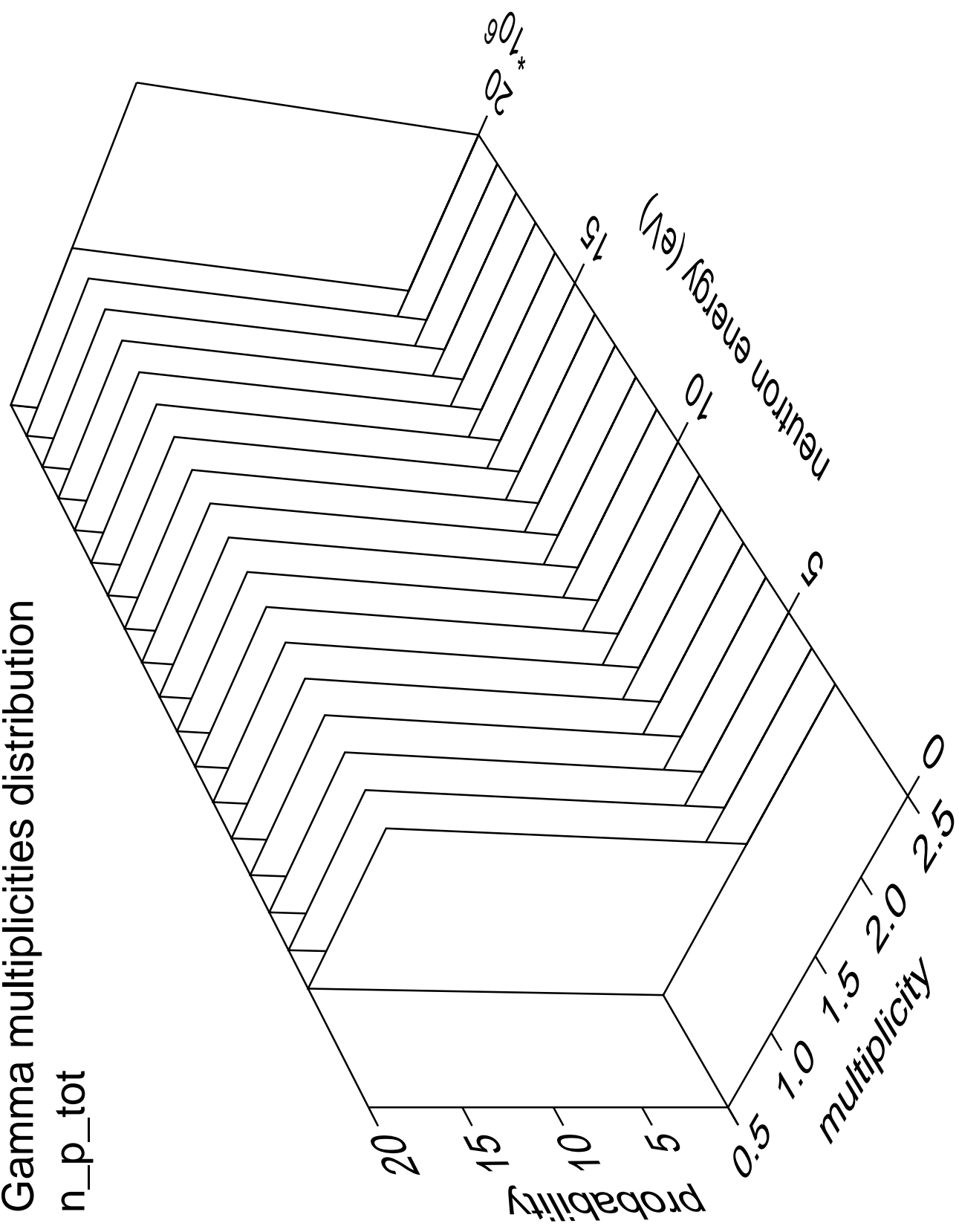
neutron energy (eV)

gamma energy (MeV)

probability

Gamma angles distribution
n_p_tot

Gamma multiplicities distribution n_p_tot

Gamma energy distribution
n_a_tot

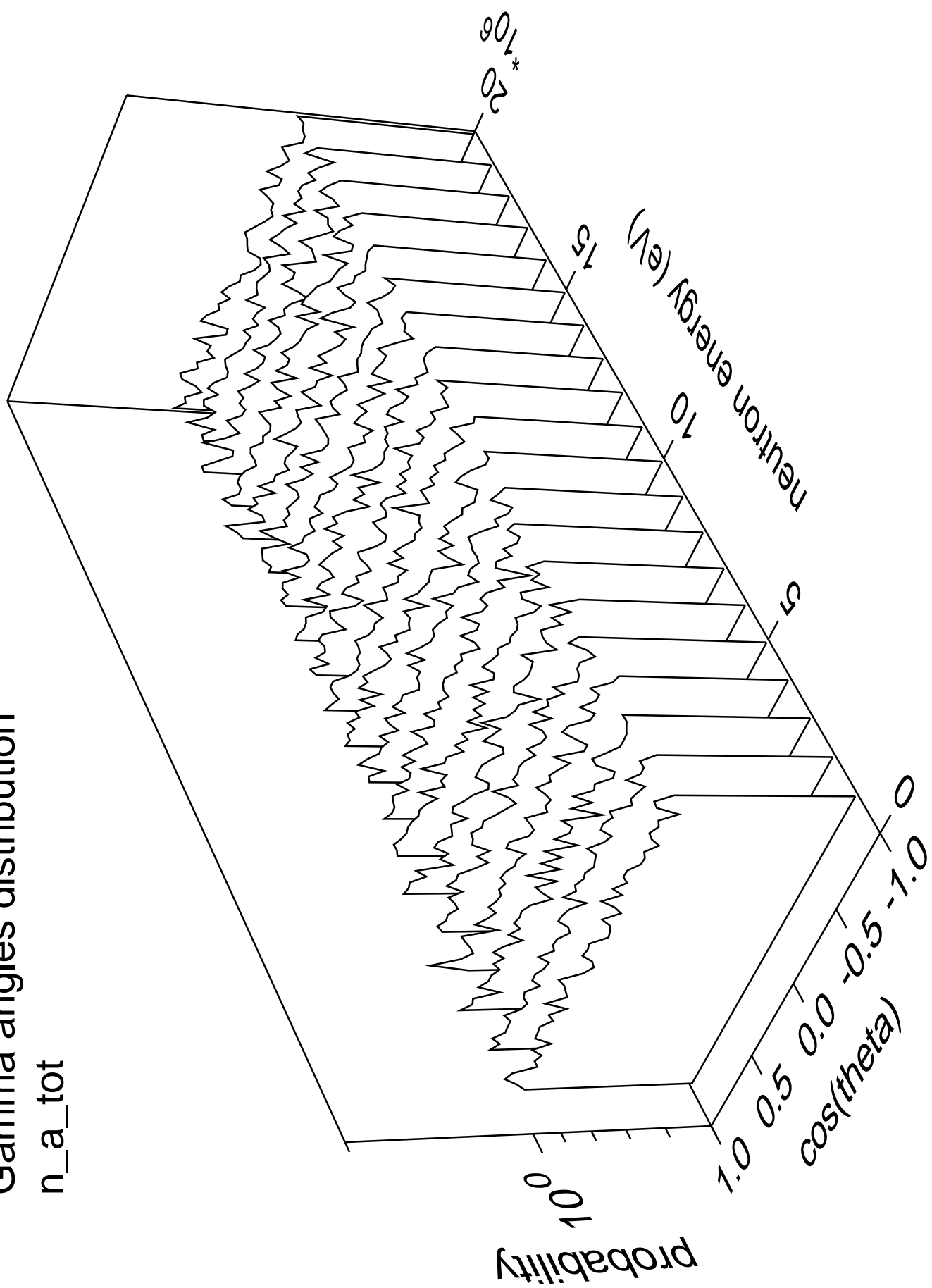probability

neutron energy (eV)

gamma energy (MeV)
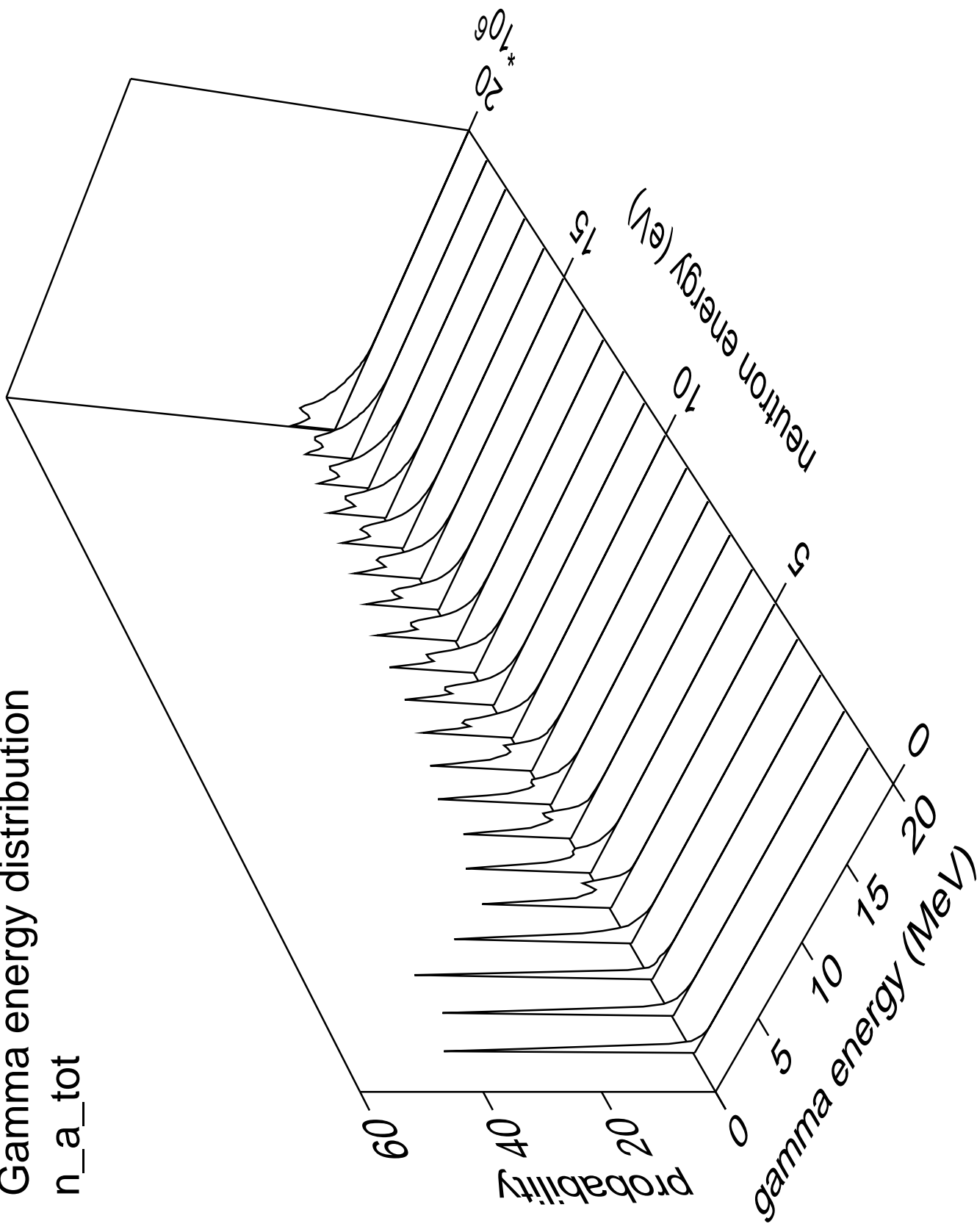
Gamma angles distribution
n_a_tot

Gamma multiplicities distribution
n_a_tot

probability

neutron energy (eV)

multiplicity

20 *10^6

15

10

5

0

2.5

2.0

1.5

1.0

0.5

20

15

10

5